

AMATEUR

RADIO



JANUARY 1991

RRP \$3.25



THE WIA RADIO AMATEUR'S JOURNAL

KENWOOD

TS-140S HF TRANSCEIVER

Why even look at a lesser rig when you can enjoy the famed *Kenwood competition edge* with the class-leading TS-140S HF transceiver?

- 160 to 10M operation — plus general coverage receive.

- All mode operation — great for modes like Packet too.

- 31 memory channels — store your frequency, mode and filter width.



- CW full break-in, semi break-in and VOX

- 10Hz step dual digital VFOs — cross-mode split is a snap

- Full 102dB dynamic receive range

- Receiver noise floor -138dBm*

The only thing this attractive rig won't punch a hole in is your budget! It incorporates an outstanding 500 kHz to 30 MHz general coverage receiver with superior dynamic range, and combines the ultimate in compact size with advanced technology. You get a full 110 watts of SSB, 100 watts of CW, 50 watts of FM and 40 watts of AM on all HF amateur bands.

The TS-680S covers the exciting 6M amateur band as well as all the HF amateur bands. The TS-680S is similar to the TS-140S, but does not include vox, which is available as an option from your Kenwood dealer.

Move up to either of these great Kenwood transceivers and you'll get great performance, both in the shack and out on the road.

TS-680S HF + 6M TRANSCEIVER



* with optional 500Hz CW filter YK-455C-1.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
(INCORPORATED IN N.S.W.)

8 Figtree Drive, Australia Centre, Homebush, N.S.W. 2140
Phone (02) 746 1519, (02) 746 1888, Fax (02) 746 1509
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, mail or fax for information

Name.....

Address.....

..... Postcode.....

Publication..... Issue

Model.....



Amateur Radio is published by the Wireless Institute of Australia, as its Official Journal, on the last Friday of the previous month.

EXECUTIVE EDITOR

Bill Rice VK3ABP

MANAGING EDITOR

Graham Thornton VK3IY

NEWS EDITOR

Jim Linton VK3PC

SENIOR TECHNICAL EDITOR

Peter Gibson VK3AZL

TECHNICAL EDITORS

David Brownsey VK4AFA
Don Graham VK6HK
Evan Jarman VK3ANI
Peter O'Connor VK4KIP
Gil Sones VK3AUI
Phil Steen VK4APA
Roy Watkins VK6XV

DRAFTING

Vicki Griffin VK3BNK

MARKETING

Bruce Kendall VK3WL
Norm Eyres VK3ZEP

ADVERTISING

Brenda Edmonds VK3KT
June Fox

BUSINESS MANAGER

Bill Roper VK3ARZ

All contributions and correspondence concerning the content of Amateur Radio should be forwarded to:-

The Editor
Amateur Radio
PO Box 300
Caulfield South
VIC 3162

Registered Office

3/105 Hawthorn Road
Caulfield North VIC 3161

Telephone: (03) 528 5962

(03) 523 8191

Fax: (03) 523 8191

(Non dedicated line)

Business hours: 9.30am to 3pm
weekdays

Deadlines

	Editorial	Hamads
Feb	7/1/91	9/1/91
March	4/2/91	6/2/91
April	4/3/91	6/3/91

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA.

© Wireless Institute of Australia 1991

CONTENTS

Technical

25 W Mosfet Linear Amplifier	7
<i>Drew Diamond VK3XU</i>	
Commodore C64 Overheating Problems	11
<i>Peter McAdam VK2EVb</i>	
Getting Started with Amateur Radio Satellites (Part 1)	12
<i>Bill Magnusson VK3JT</i>	
VK Windom Antenna... Random Radiators	36
<i>Ron Fisher VK3OM & Ron Cook VK3AFW</i>	

General

AR Annual Index 1990	50
More about "Krait"	19
<i>Horrie Young VK2AMZ</i>	
History of The WIA Journal (Part One)	20
<i>Colin MacKinnon VK2DYM</i>	
Scout Radio Station Needs Operators	18
<i>Keith Alder VK2AXN</i>	
The Aussat ATV Test	16
<i>Tim Mills VK2ZTM</i>	
The Case of the Disappearing Microwaves	17
<i>David G Barneveld VK4BGB</i>	
The Colvins in Australia	14
<i>Stephen Pall VK2PS</i>	
The Story of a Window	13
<i>VK8**</i>	

Operating

Awards	22
Contest	
1990 John Moyle Contest Rules	25
RD 1990 Contest Results	23
VHF/UHF Field Day Contest Rules	27

Columns

Advertisers' Index	56
ALARA	39
AMSAT	39
Club Corner	45
Divisional Notes	
VK2 Notes	41
VK3 Notes, VK4 Notes	42
5/8 Wave	43
Editor's Comment	2
Education Notes	34
EMC Report	33
HF Predictions	52
Hamads	54
How's DX?	27
Intruder Watch	47
Morseword No 46	42
Over to You - Members Opinions	47
Pounding Brass	33
QSL Bureaux	56
QSLs from the WIA Collection	43
Silent Keys - Obituaries	48
Spotlight on SWLing	35
Stolen Equipment	55
WARC 92 Update	35
WIA Directory	23
WIA News	3
WICEN Vic	41

Cover

This month we depict the WRANS Memorial Window, located in the Garden Island Chapel, Sydney. We thank the following for permission to reproduce the photo: Celtic Studios Sydney - the designers of the window, the 1988 Ex-WRANS Reunion Committee - holders of the copyright, and Bartels Postcards and Souvenirs - publishers of the postcard from which our reproduction was made. See "The Story of a Window" on page 13.

EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

Start of the Decade — Clearing the Air

Looking back through my records, I see that last year's January editorial was entitled "End of the Decade". Perhaps it would have been better to call it the "Start of the Nineties", but now there is no doubt that we are in the new decade, and its first year has hardly been an unqualified success! Financial gloom, business doom, and even the threat of war. Economics, politics and religion have combined to form a world scene with few bright spots. Perhaps the self-funded, apolitical, non-religious international brother- (and sister) -hood of amateur radio can play some part in restoring the world to relative harmony, prosperity and peace. Some of us may be in a position to have some effect; most of us, I fear,

are merely pawns in an incredibly complex game.

Let us return to our own little domestic scene. Last night, at the December meeting of the Publications Committee, there was even more discussion than usual about whether we are keeping AR up to the standard and style you all want; can we improve, and where and how? The very first question, though, was what was the state of affairs with the material already on hand? This is a regular part of the meeting routine, but even so, it appeared that several items had sunk without trace! After a frantic search at home (where most editorial work is done) the missing items were found today. It is incredible how well a few typed pages (let alone handwritten notes) can hide themselves in a stack

of material 15 or 20 centimetres high!

As a result of all this it seemed a good idea to try to clear the air as a New Year effort. Some of you may have submitted items which were not published. Why? Or, after initial acknowledgement, you heard no more. Why? Your original wording may have been modified here and there, "pruned" in length, or words added. Why? You have a favourite subject, but we never seem to publish anything about it. Why? You wrote to "Over to You" and your letter was altered considerably. You tried again, and it came back to you with a request to reduce it to 200 words. Why?

Most of these questions can be answered by three statements. We can publish only what we receive. We could use more technical articles. We tend to have more than enough general-interest material.

To expand a little on these: we have very limited space, so the general-interest items, to

be fair to their authors, can only be published in order of receipt. Sometimes this means that by the time its turn comes up an article is no longer topical; the best part of a year may have passed and it's almost time for next year's contest or birthday or whatever. It's too late! Sorry, folks!

Old Chinese proverb: A genius can say in 100 words what anyone else can say in 1000! We know we are not geniuses, literary or otherwise. Neither, we submit, are most of you! He who objects most strongly to changing his wording, probably needs it most. And, frequently, to fit the available space, an article may need to lose 200 or 300 words at one hour's notice. Otherwise, it won't go!

Finally, your favourite technical topic. No one writes about it. Perhaps you could. Why not give it a go? Typed if possible, but hand printing acceptable. NOT ALL UPPER CASE! Okay? See it soon?

ar

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society - Founded 1910

Representing Australian Radio Amateurs - Member of the International Amateur Radio Union

Registered Executive Office of the WIA: 3/105 Hawthorn Road, Caulfield North, Vic, 3161

All mail to: **PO Box 300, Caulfield South, Vic, 3162** Telephone: (03) 528 5962 (03) 523 8191

Fax: (03) 523 8191 (Non-dedicated line)

Business Hours: 9.30 am to 3.00 pm on Weekdays

General Manager and Secretary: Bill Roper VK3ARZ

EXECUTIVE

President:	Peter Gamble	VK3YRP	VK1 Federal Councillor:	George Brzostowski	VK1GB
Vice Chairman:	Ron Henderson	VK1RH	VK2 Federal Councillor:	Terry Ryeland	VK2UX
Treasurer:	Arthur Evans	VK3VQ	VK3 Federal Councillor:	Peter Maclellan	VK3BWD
	Kevin Olds	VK1OK	VK4 Federal Councillor:	David Jerome	VK4YAN
	Bill Rice	VK3ABP	VK5 Federal Councillor:	Bill Wardrop	VK5AWM
Immediate Past President:	David Wardlaw	VK3ADW	VK6 Federal Councillor:	Neil Penfold	VK6NE
			VK7 Federal Councillor:	Joe Gelston	VK7JG

FEDERAL CO-ORDINATORS

Amsat:	Graham Ratcliff	VK5AGR	Int'l Travel Host Exch:	Ash Nallawalla	VK3CIT
Awards:	Phil Hardstaff	VK3JFE	QSL Manager (VK9, VK0):	Neil Penfold	VK6NE
Act Contest Manager:	Neil Penfold	VK6NE	FTAC:	John Martin	VK3JC
Education:	Brenda Edmonds	VK3KT	Federal Tapes:	Ron Fisher	VK3OM
EMC:	Hans Ruckert	VK2AOU	Standards:	Gordon Harrison	VK2ZTB
Historian:	John Edmonds	VK3AFU	Videotape:	John Ingham	VK5KG
Intruder Watch:	Gordon Loveday	VK4KAL	WICEN:	Leigh Baker	VK3TP

WIA NEWS

FROM THE WIA EXECUTIVE OFFICE

Market System for Radio Spectrum

A Media Statement from the Department of Transport and Communications (DoTC) on 14th October 1990 announced the release of a report "Management of the Radio Frequency Spectrum: an Economic Analysis" prepared by the Bureau of Transport and Communications Economics (BTCE). The report proposes a "more commercially based approach to spectrum management". Basically, what that means is auctioning of currently unused

spectrum, and open trading and leasing of spectrum access rights, with the costs being determined by the demand for the specific spectrum area.

According to the news release there would be an overriding legal framework to regulate the trading and resolve conflict, as well as to monitor the needs of users providing "public and merit goods".

The report is to be submitted to the current House of Representatives Committee of Enquiry into the management of the radio frequency spectrum. Copies of the report are

available at Commonwealth Government bookshops in capital cities.

The WIA, representing the amateur service in Australia, will be considering the report and responding to it in further submissions to the Committee of Enquiry.

International Frequency List on Disk

A press release from the International Telecommunications Union (ITU) on 15th October 1990 advises that the International Frequency List is now available on CD-ROM (compact disc - read only memory). This list was first published in 1928, when it contained information on the 1700 frequencies then in use. In 1985, when the number of

frequencies had reached 1,100,000, the format was changed from paper to microfiche.

The compact disc is one further step towards making the publication more flexible and useful. The information supplied can be accessed by frequency, country, notifying administration, area, region or class of station. Subscribers receive either one or two updates per year.

Advance Notice of AR Special Issue

In line with WIA policy of producing several "special" issues of Amateur Radio magazine each year, the Publications Committee has decided that the May 1991 issue will concentrate on "Advanced Modes".

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers	Weekly News Broadcasts	1991 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7096	President Secretary Treasurer Ted Pearce Jan Burrell Ken Ray	VK1AOP 3.570 MHz VK1BR 2m ch 6950 VK1KEN 70cm ch 8525 2000 hrs Sun	(F) \$67.50 (G) (\$) \$54.00 (X) \$40.50
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta) 2124 Phone (02) 689 2417 Fax (02) 633 1525	President Secretary Treasurer Roger Henley Tim Mills David Horstall Office hours Mon-Fri 1100 - 1400 Wed 1900 - 2100	VK2ZIG 1.845 MHz AM, 3.595 AM(1045) SSB (1915 only), 7.146 AM (1045 only) 10.125 SSB (1045 only), 28.320 SSB, 52.120 SSB 52.525 FM VK2KFU 144.12 (SSB), 147.000 FM(R) 438.525 FM(R) 584.750 (ATV Sound) 1281.75FM (R) Relays also conducted via many repeaters throughout NSW.	(F) \$65.00 (G) (\$) \$52.00 (X) \$38.00
VK3	Victorian Division 38 Taylor St Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours 0900-1600 Tue & Thur Jim Linton Barry Wilton Rob Hailey	VK3PC 1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon VK3XV 147.225 FM(R) Mt Baw Baw VK3XLZ 146.800 FM(R) Mildura, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) \$69.00 (G) (\$) \$55.00 (X) \$42.00
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Secretary Treasurer Murray Kelly Eddie Fisher Eric Fittock	VK4AOK 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 28.470, 28.400, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) VK4ABX 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday VK4NEF Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$67.50 (G) (\$) \$54.00 (X) \$40.50
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer Rowland Bruce John McKellar Bill Wardrop	VK5OU 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) VK5BJM South East, ATV Ch 34 579.00 Adelaide, ATV 444.250 Mid North VK5AWM (NT) 3.555, 146.500, 0900 hrs Sunday	(F) \$67.50 (G) (\$) \$54.00 (X) \$40.50
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Secretary Treasurer Alyn Maschette John Farnan Bruce Hedland - Thomas	VK6KWN 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, VK6AFA 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz Country re- 3582, 147.350(F) Busselton 146.900(R) Mt William VK6OO (Bunbury) 147.225(R) 147.250 (R) Mt Saddleback 146.750(R) Al- bany 146.825(R) Mt Barker Broadcast repeated on 3.560 at 1930 hrs.	(F) \$59.00 (G) (\$) \$47.50 (X) \$32.00
VK7	Tasmanian Division 148 Derwent Ave Lindisfarne TAS 7015	President Secretary Treasurer Tom Allen Ted Beard Peter King	VK7AL 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 VK7EB (VK7RAA), 146.750 (VK7RPNW), 3.570, 7.090, 14.130, 52.100, VK7ZPB 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$65.00 (G) (\$) \$52.00 (X) \$38.00
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three year membership available to (F) (G) (X) grades at fee x 3 times

Note: All times are local. All frequencies MHz.

Remember Section 14 of the AOC Syllabus? It includes high definition television, slow scan television, radio teletype, repeaters, satellite translators and transponders, beacons, bandwidth compression techniques, and computer controlled communication systems. Any of these are fair game for the May "special" issue, so if you have been thinking about preparing an article or comment relating to any of these modes, now is the time to do so. Remember that all the Publications Committee members are volunteers, so it may take a few months for an article to be processed. Drafting of diagrams also takes time, so allow for this and start on your contribution now.

Ross Hull Contest

Have you pencilled in this important VHF-UHF contest on your diary? The 1990-1991 contest runs from 22nd December 1990 until January 19th 1991, but even if you missed the start of the contest it is not too late, as the score is calculated on the entrant's best seven days, which need not be consecutive.

The complete revised rules were published in the November 1990 issue of "Amateur Radio" magazine on page 32. Important changes this year include basing the scoring on both distance and frequency, and the introduction of separate sections for terrestrial and satellite contacts.

Why not take advantage of the summer propagation conditions and the extra activity on VHF/UHF during this contest. And don't forget to submit your log in good time.

Mongolian Radio Sports Federation

The International Amateur Radio Union (IARU) advises that the Mongolian Radio Sports Federation has applied for IARU membership. MRSF reports that there are about 1300 radio sportsmen in Mongolia, 39 radio amateurs with call signs, and 117 ama-

teur listeners.

Region 1 of the IARU has supported the application, advising that they are satisfied that MRSF is a desirable member, and is the logical representative of amateur radio in Mongolia.

It now remains for the IARU member societies to vote on the proposal that MRSF be admitted to IARU membership. The WIA registered its "YES" vote at the end of November 1990.

Radio Amateur Growth Vital

As radio amateur societies around the world strive to gain the support needed from their respective administrations in preparation for WARC 92, the growth of the amateur and amateur-satellite services is going to be a key factor.

Worldwide, the number of radio amateurs is growing at the rate of 7% per year and is expected to exceed four million by the end of the century. This growth supports the amateur service claim for more spectrum space from the International Telecommunications Union (ITU) at WARC 92. It is no exaggeration to say that for the amateur service to stay healthy it is essential for it to continue to grow.

1,000,000 Amateurs in Japan

The Japanese Amateur Radio League (JARL) recently advised that the number of amateur radio stations licensed in Japan stood at 1,027,101. This is about half of the world's total of radio amateurs.

The country with the next largest radio amateur population is the United States with 494,114 licensed stations, about a quarter of the world's total.

In comparison, the latest Australian DoTC statistics show an Australian amateur station total of 18,655 (excluding repeaters and beacons) which is less than 1 per cent of the world's total.

CW for the Disabled

Those people ready to write off the use of Morse code as obsolete will be interested to learn of a recently developed system in the USA which allows people, unable to speak or use their limbs, to send CW to a computer by using side-to-side head movements which close switches. This CW input to the computer displays type on the screen, produces printouts, and can activate a voice synthesiser.

Computer technology developments are playing a very important part in bringing amateur radio to disabled persons.

Membership Renewals

Have a look at the address label you received with your last issue of Amateur Radio magazine. If the first two digits on the top line of information on that address label are "01", then you will be one of the 4600 WIA members due to renew your membership as from 1st January 1991.

These renewal notices were sent out in the post in the first week of December 1990. Please note that unless your renewal is received at the Executive office by Friday 18th January, you will not receive the February "reference" issue of Amateur Radio magazine.

In most WIA Divisions the increase in the membership subscription rate has been kept well below the current inflation rate. This has been made possible, in part, by increased efficiency and cost cutting achieved in the Executive Office over the last year. Your prompt forwarding of your membership renewals will help to maintain this efficiency.

Membership renewal time is also an opportune time to add an extra contribution to the WARC 92 Fighting Fund to help defend our hard won amateur service frequencies.

Amateur Radio 20 Year Index

The WIA has previously notified members of the availability of this index either in hard copy or on 5 1/4 or 3 1/2 inch computer disk. The index is continually being extended as each month's content is added in.

This is a very simple way to track down the technical article you remember reading but cannot remember when. Copies can be obtained from the Executive Office for a cost of \$5.00 for hard copy or \$10.00 on an IBM format floppy disk.

When ordering the computer disk version, please state whether you require it in the dBase III Plus .DBF file format, or in an ASCII format, and the size of the disk required.

Advertising in Amateur Radio

A check of three years of back issues of Amateur Radio magazine reveals that over 50 firms and individuals have placed commercial advertising in our magazine, some on an on-going basis, others as a once-off effort.

Currently, Amateur Radio has a few "regulars" and not too often a new advertiser coming in. Advertising revenue can help the WIA by offsetting the cost of the magazine production, and benefits the members by alerting them to the availability of equipment and new products.

However, the advertisers expect to gain from their advertisements, too. So let them know when you deal with them if their advertisements in Amateur Radio magazine have influenced you. And if you, your employer or other associate, can be persuaded to contract for some advertising, the WIA will be very pleased to co-operate.

1991 Radio Amateur Call Book

This is a reminder that the fast selling 1991 Call Book is now available at your Divi-

sional Bookshop. As well as the complete Australian call-sign listings, it includes band-plans, VHF-UHF records, beacon and repeater lists (both VK and ZL), the DXCC list, commercial Television frequencies, TV Carrier frequencies, and information from DoTC.

The recommended cover price is \$11.00, but members can purchase their copy from their Divisional Bookshop for \$9.50 plus packing and postage if applicable.

Supplies are expected to run out early in the new year, so it is recommended you place an early order for your copy.

Incidentally, the Executive office often receives requests for the Call Book on computer disk. That would be a great idea but, under the commercial contract the WIA has with the Australian government to publish the Call Book, the copyright conditions prohibit such a version of the Call Book.

Amateur Radio in Space

The amateur radio space program has long been an international activity with radio amateurs from many countries contributing to the design and construction of amateur satellites.

But did you realise that in 1990 alone there were two British, two American, one Brazilian, one Argentine and one Japanese amateur satellites launched?

ATV Repeater Closed Down

The Townsville Amateur Radio Club ATV repeater, VK4RAT, is the first amateur television repeater to have to cease operation on the 576 MHz band because of the Regional TV Aggregation scheme. VK4RAT ceased transmissions as from 30th November 1990, and the new commercial TV station in Townsville commenced transmissions early in December.

WARC 92

At the Executive meeting on 20th November, David Wardlaw, VK3ADW, the WIA WARC Co-ordinator, reported on recent developments in the preparation for WARC 92.

The main points of David's report were:

- * Low Earth Orbit satellites are seeking up to 5 MHz of frequency below 1 GHz - in fact the USA draft proposal indicates the FCC is looking at allocations on either side of the 144 MHz band.
- * Wind profile radars in the Meteorological Aids band may have to be moved, possibly into the 70 cm band,
- * to avoid interference to search and rescue satellites.
- * The IARU report to the Joint Interim Working Party endorses the move of HF Broadcasting stations to SSB.
- * The FCC in USA has proposed a world-wide amateur band - 6900 to 7200 kHz - to enable HF broadcasting to fit in within Region 2 and still not disadvantage the amateur service.
- * The FCC has also proposed the use of 2390 to 2450 MHz for Satellite Sound Broadcasting, and 420 to 421 MHz as a mobile satellite band limited to low earth orbit satellites.

This World Administrative Radio Conference is going to raise a vast number of issues of direct concern to the amateur service. The WIA is very lucky to have an experienced, dedicated group working on behalf of all Australian amateurs.

Amateur Radio Awards

As members of the WIA know, Amateur Radio magazine is a magazine of the members for the members of the organisation which represents the Australian amateur service both nationally and internationally.

Quite a few of the interesting and original articles which

MAGPUBS

ANTENNA BOOKS

The ARRL Antenna Handbook 15th Edition	#BX161	\$36.00
Antenna Compendium Volume 1 ARRL	#BX163	\$22.00
Antenna Compendium Volume 2 ARRL	#BX292	\$24.00
Antenna Compendium Volume 2 & IBM PC Disk ARRL	#BX294	\$36.00
Antenna Impedance Matching ARRL	#BX257	\$30.00
Yagi Antenna Design ARRL	#BX164	\$30.00
WIFB's Antenna Notebook Doug DeMaw ARRL	#BX179	\$20.00
Novice Antenna Notebook Doug DeMaw ARRL	#BX162	\$16.00
Practical Wire Antennas John D. Hayes G3BUD RSGB	#BX296	\$28.00
HF Antennas L.A. Mason G8KX RSGB	#BX298	\$28.00
ANTENNAS 2nd Edition John D. Kraus W3JK	#BX259	\$104.00
Antenna Handbook William I. Orr W5SAI & Stuart D. Cowan W2LX	#BX217	\$17.30
Vertical Antenna Handbook I. Orr W5SAI & Stuart D. Cowan W2LX	#BX230	\$16.85
Beam Antenna Handbook W. I. Orr W5SAI & S. D. Cowan W2LX	#BX215	\$19.30
Wire Antennas Handbook I. Orr W5SAI & Stuart D. Cowan W2LX	#BX215	\$17.30
Cubical Quad Antennas W. I. Orr W5SAI & S. D. Cowan W2LX	#BX214	\$14.50
The truth about CB Antennas W. I. Orr W5SAI & S. D. Cowan W2LX	#BX219	\$17.30
Transmission Line Transformers J. Savicki W2FMI New 2nd Ed	#BX134	\$60.00

SATELLITE BOOKS

Occur Satellite Review Dave Ingram K4TWJ	#MFJ31	\$17.00
Satellite Experimenters Handbook Martin R. Davidoff ARRL	#BX177	\$25.00
Satellite Anthology The ARRL	#BX180	\$16.00
AMSAT-NA 5th Space Symposium 1987 AMSAT-ARRL	#BX182	\$17.50
AMSAT-NA 5th Space Symposium 1987 AMSAT-ARRL	#BX199	\$17.50
SPECIAL the 2 books 5th & 6th Symposium	#BX800	\$25.00
Space Almanac Anthony R. Curtis ARRL	#BX299	\$45.00

PACKET RADIO BOOKS

Gateway to Packet Radio Stan Horowitz WA1LOU 2nd Edition	#BX160	\$24.00
The Packet Users Notebook Buck Rogers WA4BT CQ	#BX285	\$16.50
Packet Radio is Made Easy Buck Rogers WA4BT MFJ	#MFJ32	\$20.50
AX.25 Link Layer Protocol anal	#BX178	\$16.00
Computer Networking Conferences 1 - 4 1981 to 1985 ARRL	#BX165	\$26.00
Computer Networking Conferences 5th 1986 ARRL	#BX167	\$20.00
Computer Networking Conferences 6th 1987 ARRL	#BX168	\$20.00
Computer Networking Conferences 7th 1988 ARRL	#BX164	\$25.00
Computer Networking Conferences 8th 1989 ARRL	#BX235	\$24.00
SPECIAL - All 5 Books - Conferences 1 to 8	#BX3006	\$80.00

VHF/UHF/MICROWAVE

RSGB Microwave Handbook Volume 1 M. W. Dixon G2PFR RSGB	#BX318	\$70.00
VHF-UHF Manual George Jessop G5JP RSGB	#BX287	\$48.00
all about VHF amateur Radio William Orr W5SAI	#BX216	\$17.50
21st Central States VHF Conference 1987 ARRL	#BX172	\$17.50
Mid-Atlantic VHF Conference Oct 1987 ARRL	#BX175	\$17.50
22nd Central States VHF Conference 1988 ARRL	#BX173	\$17.50
23rd Central States VHF Conference 1989 ARRL	#BX206	\$17.50
Microwave Update 1987 Conference ARRL 1987	#BX174	\$17.50
Microwave Update 1988 Conference ARRL 1988	#BX174	\$17.50
Microwave Update 1989 Conference ARRL 1989	#BX213	\$24.00
UHF Compendium Part 1 & 2 Volume 1	#BX250	\$49.95
UHF Compendium Part 3 & 4 Volume 2	#BX251	\$49.95

HANDBOOKS

ARRL 1990 Handbook ARRL Hard Bound	#BX287	\$52.90
The Operating Manual ARRL	#BX192	\$30.00
The ARRL Electronics DATA BOOK ARRL	#BX201	\$24.00
Radio Data Reference Book G.R. Jessop RSGB	#BX189	\$36.00
Radio Communication Handbook Fifth Edition RSGB	#BX286	\$56.00
Radio Handbook 23rd Edition William I. Orr W5SAI	#BX22424	\$49.50
Motorsola RF Device Data Motorola 5th Edition 2 Book Set	#BX5047	\$24.50

MAPS

Prefix Map of the World Radio Publications	#BX234	\$8.00
Prefix Map of North America Radio Publications	#BX235	\$8.00
Radio Amateurs World Atlas Radio Publications	#BX236	\$8.00
Madhead Locator - World Grid Atlas ARRL	#BX157	\$10.00

The above books, plus many more, are available from your WIA Divisional Bookshop. All items are less 10% discount for WIA Members and are plus postage and handling where applicable.

All Prices are Subject To Change Without NOTICE
If not in stock at your Divisional Bookshop, your order will be taken and filled promptly. Not all publications are available from all Divisions. * Price Changes... - price Reduced... + Price Increase

appear in Amateur Radio are republished in overseas publications. But being published in Australia, and possibly overseas, is not the only accolade for which authors of articles submitted to Amateur Radio magazine become eligible.

Each year the WIA Publications Committee selects winners of the three annual magazine awards. With the wide range of quality articles which appeared in our magazine during the 12 issues published during 1990, the task of the Publications Committee was not an easy one.

However, after much deliberation, the following winners were selected for 1990.

The Al Shawsmith Journalistic Award, presented for the article on a radio theme considered best to display literary merit, was awarded to Philip Greentree VK2IW. The winning article "Newcastle Earthquake Disaster" appeared in the June issue of Amateur Radio, commencing on page 22. Philip receives an engraved wall plaque as well as a cheque for \$100.00.

The Technical Award, for the best technical article

published during the year, was awarded to Drew Diamond VK3XU for his article "Super-het-DC Receiver for 3.5 to 4.0 MHz" which was published in the May issue of Amateur Radio, commencing on page 8. Drew receives a cheque for \$100.00.

The Higginbotham Award, for meritorious service to amateur radio generally, was awarded to Lloyd Butler VK5BR for the "continuing technical excellence in his contributions to Amateur Radio magazine". Lloyd, who had a total of 12 articles published in Amateur Radio during 1990, also receives a cheque for \$100.00.

The Amateur Image

An article which appeared in the IARU publication, "WARC Countdown, Issue No 3", is well worthy of republishing, and should be read by all amateurs.

"As WARC 92 approaches, the public image of Amateur Radio becomes ever more important. We must do everything possible to convince our

respective administrations, and ultimately the general public, that we deserve their support at WARC 92. Accordingly, we must insure that our on-the-air behaviour and performance are totally professional and that our commitment to the ideals of the amateur fraternity is reflected in everything we do.

In 1928, Paul M. Segal, W9EEA, wrote an "Amateurs Code" that has guided radio amateurs for more than 60 years. It has been updated several times but has always retained the essential character of Segal's original. Recently, the New Zealand Association of Radio Transmitters (NZART) developed a version of the "Amateur's Code" that applies to radio amateurs world-wide.

With due credit to NZART, the IARU Administrative Council invites and encourages member societies throughout the world to adopt the "Amateur's Code" as their own. The Council is convinced that by following the code, individual amateurs will enhance the amateur image and, ultimately, our chances of success at WARC 92.

The Amateur's Code

The Radio Amateur is:
CONSIDERATE ...never knowingly operates in such a way as to lessen the pleasure of others.

LOYAL ...offers loyalty, encouragement and support to other amateurs, local clubs, and the national membership of the International Amateur Radio Union, through which Amateur Radio is represented to government and internationally.

PROGRESSIVE ...with knowledge abreast of science, a well built and efficient station and operation above reproach.

FRIENDLY ...slow and patient sending when requested; friendly advice and counsel to the beginner; kindly assistance, co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

BALANCED ...radio is an avocation, never interfering with duties owed to family, job, school, or community.

PATRIOTIC ...station and skill always ready for service to country and community."

Do you follow "The Amateur's Code"?

BILL ROPER VK3ARZ

CONFIRMS
2X250 030
WITH VK1LF
ON 14.1087
AT 1115 GMT
ON 11.03.91
R 3.3.3 F-
W2NIG & ROSL MGR

BANDI
CENTRAL
AFRICAN
AFRICAN

VP8BWL (G3NKG)

RADIO	DATE	QTY	REX	T-WAY	STX
VKA2PS	22 MAR 89	11.38	14	at 133	56

Task Save for ASDs & G.L.

INSTR: QSL TO G3NKG & DIRECTOR/MPD
TZ/AX TSD 4306
APT 381 TRIMMER
PWR 100W
73 *Clive*
"EVE BERNELL

8R1AH

Radio **VKA2PS** Confirming QSO of **March 22** at **89**
at 03:40 UTC on **14** MHz Mode **SSB** NET **2.7**

OP: ATZE VAN DER KOOIJ, c/o AIRPORT MANAGER,
TRENKLE AIRPORT, GUYANA, SA

QSL Verified by WACED QND QJ06
(4 M ONLY)

ISLANDS ON THE AIR <> SPECIAL EVENT STATION WF1N

The island of Martha's Vineyard (IOTA, NA-46) will be on the air April 12-15, 1991. The team, led by Tony Spino - WF1N - will operate SSB in the General portions of the 10, 15, 20, 40 and 75 metre bands. RTTY operation is also planned. The island is Dukes County, Massachusetts for County Hunters - direct, 91 Callbook (KA1HBV in older Callbooks) or via the Buro.

Other members of the team are Rich, NT1RT; Sam, K1SCN; and Lou, KA1DIG.

25W Mosfet Linear Amplifier

DREW DIAMOND VK3XU
'NAR MEIAN' GATTERS RD
WONGA PARK 3115

MANY OF US HAVE enjoyed working stations from near and far with a QRP transmitter of perhaps two or three watts output power. There are occasions though, when more power is required to provide nearer 100 per cent readability at the far end. The usual solution, of course, is to boost the output power with a linear amplifier.

For a few years now, amateurs and experimenters have been successfully using power MOSFET devices (primarily intended by their makers for switched-mode power supply work) as very cheap and robust power amplifiers to about 14MHz, and even 30MHz in some applications.

This amplifier was empirically designed around a pair of Motorola MTP4N08 80volt/4amp devices priced at \$1 each from a local supplier.

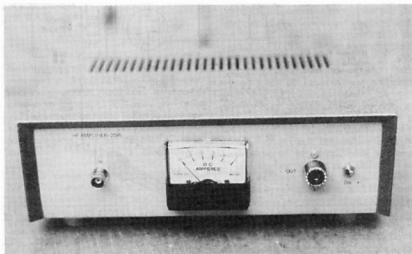
Performance

- Frequency Range:** 1.8 to 7MHz, usable to 14MHz.
Output Power: Nominally 25W, typically 30W PEP or CW.
Input Power: Nominally 1W.
Power Gain: about 14dB.
Input SWR: Less than 1.2.
Two-tone IMD Products: In the order of -35dB.
Harmonics: -50dB (depends on LPF).
Output Protection: Will withstand any load SWR, including short and open at full drive without damage.
Supply: Nominally 25V at up to 2A (reduced output at 13.8V).

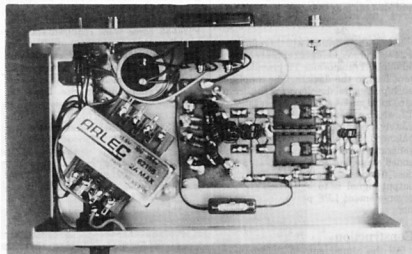
Circuit

The input impedance looking into the primary of T1 is rather reactive, due to the 300pF input capacitance of each device gate. The overall gain of the amplifier is such that we can afford to employ a 3dB loss pad to 'normalise' the input at something closer to the required 50 ohms, and so keep the input SWR below 1.2.

Broadband transformer T1, terminated



The complete amplifier in its box



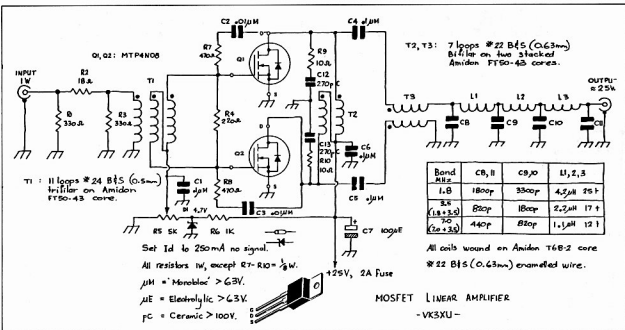
Interior view of the amplifier

by R4, provides push-pull drive to the two gates. The 220 ohm termination improves the input SWR and loads the gates such that the amplifier is very reluctant to 'take off'. Further stabilisation is achieved with CR networks C2-R7 and C3-R8 connected between drain and gate of each device. Any tendency to common mode 'latch-up' type oscillation is suppressed

by networks R9-C12 and R10-C13.

The result is an amplifier which is extremely tolerant of load mis-match.

By moving to a higher supply voltage, not only is the current required kept to a reasonable value (2A at full output), but the need for elaborate impedance-matching networks is avoided in this instance. The output Z of one device may be esti-



mated by:

$$Z = \frac{V_d^2}{2P_o} = 24 \text{ ohms}$$

where V_d = effective source-drain voltage, and P_o = expected output power. Assuming an effective voltage of 24V, and 12W output, then

$$Z = \frac{24^2}{24} = 24 \text{ ohms}$$

The drain to drain Z will therefore be $2 \times 24 = 48$ ohms, being acceptably close to 50 ohms. Transformer T2 provides current feed to the devices. The amplified push/pull signal developed at the drains is coupled via C4 and C5 into 'sortabalan' T3, which converts the 50 ohm (approximately) balanced output to 50 ohm unbalanced. A push/pull configuration generates fewer harmonics than a single-ended stage, but the inclusion of a low-pass filter is still obligatory if a clean output signal is to be put to air. The seven-element LPF provides this function.

Construction

All the components of the amplifier and one LPF are accommodated upon a double-sided circuit board. The un-etched side provides a continuous 'ground plane' under the active component area as an aid to circuit stability. No holes are required for component leads, but rather are soldered directly onto the copper pads 'VHF fashion' as shown.

The Mosfets must each be fitted with a heatsink. Type 6030 sinks will fit on the space provided. Additional dissipation capacity is obtained by attaching the

PWB directly to the chassis. A smear of heatsink compound or petroleum jelly must be applied between device and heatsink. The Mosfet drains are connected to the mounting tag, so don't forget to fit insulated washers under the heat of each screw.

It was found that two stacked Amidon FT50-43 cores were required each for broadband transformers T2 and T3, which are made as follows: Take two 300mm lengths of #22 B&S (0.63mm) enamelled wire. Twist them together at one end, which is clamped in a vice. Draw the wires together and fix the joined free ends in the chuck of a hand drill. Whilst maintaining tautness on the pair, turn the drill until you have about three twists per centimetre. Pull the drill to set the twist, then remove the pair. Carefully wind on about seven loops, leaving about 2cm free at each end. Remove about 1cm of enamel from each wire. For T2, identify the 'windings' with your multimeter on ohms. Connect the end of one to the start of the other to form the centre tap. The starts are shown schematically with a dot.

The output signal is propagated along the pair for T3, and no connection sorting out is required for this one.

T1 could be a bit tricky. Take three 300mm lengths of #24 B&S (0.5mm) enamelled wire. Twist the triplet up as previously described, making sure there are no bumps or transpositions. Carefully wind about 11 loops onto an FT50-43 core. Identify one winding for the primary, and push this pair out of the

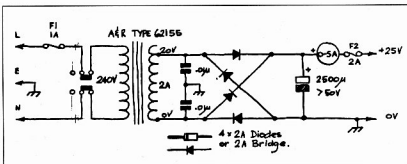
way. Now treat the remaining windings as for T2.

Because the push/pull configuration produces fewer even harmonics, the LPF filter demands are relaxed somewhat, and it is possible, if desired, to use just one filter to cover two bands. For example, if it is required to work on the 3.5 and 7MHz bands, then a filter which passes 7MHz and below may be employed. In this instance, the 7MHz harmonic of a 3.5MHz signal will be about -45dB, which in most circumstances would be satisfactory. A 3.5MHz LPF would pass 1.8 and 3.5MHz. Harmonics will be at least -50dB with a 'dedicated' filter.

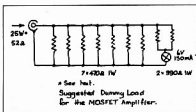
Silver mica or polystyrene capacitors should be used in the LPF, as ordinary disc ceramics are rather lossy and not suited to filter applications. If more than two consecutive bands of operation are required, the LPF for the highest band may be located upon the amplifier board permanently in circuit, and any other filters on an additional board or tagstrip. The form this takes must be left to the builder. Connections between the amplifier, switch and output connector should be made with miniature 50 ohm coax cable.

Bias zener D1, type BZY88C4V7 (4.7V/400mW) should be positioned against one of the heatsinks in order to provide a degree of thermal tracking (and hence bias stabilisation) as temperatures rise. A small blob of heatsink compound may be applied here to assist transfer.

The choice of mains transformer was dictated by standard stock availability.



Suggested Power Supply for the 25W Mosfet Linear Amplifier



The cheapest approach appears to be an Arlec type 62155 with a bridge connected to the 20V tap. Also available from Dick Smith and Jaycar is an 18V/2.2A, which would also suit. Whatever the power supply configuration, you will need about 25Vdc at up to 2A, fairly 'stiffly' regulated. Incidentally, the amplifier will still deliver about 15W output from a nominal 13.8Vdc supply. However, two-tone IMD products will be only about -30dB down (IMD improves in proportion to supply voltage).

To prevent accidental contact, all mains wiring **MUST** be covered. In addition,

both line and neutral conductors must be switched, a 1A fuse fitted in the line side, and mains earth connected to chassis ground as shown.

There must be some holes in the case or box to permit convection cooling of the power devices. The box shown is a K&W measuring 255mmW x 150mmD x 180mmH.

Other Mosfet types, such as the popular IRF510 and 511 have the same pin-outs as for the MTP4N08, and will probably work in this circuit. The 510 has lower input and output capacitance for the same voltage and current rating, and should therefore yield a better HF response. References, 4, 5 and 6 have details on low-pass filters for the higher bands.

Testing

Verify that all components are properly located, and that polarities are correct where appropriate. Remove fuse F2, and apply power. Check for about 28V (or

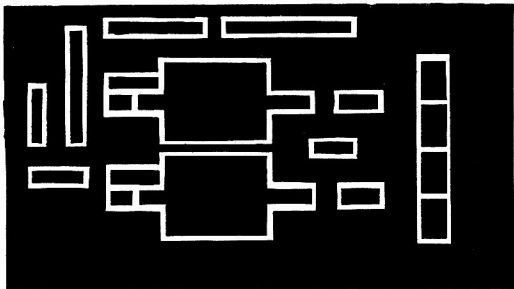
1.4 times your secondary voltage) across C13. Set R7 to minimum (CCW). Install fuse F2 and adjust R7 for a quiescent no-signal current (I_{dq}) of about 200mA.

Terminate the output with a 50 ohm dummy load/power meter of adequate capacity (see below). Connect a CW driving source (eg QRP TX of about 1W) to the input. About 25 to 30W should be indicated on the power meter, or the lamp brightly lit. After some minutes operation at full power the heatsinks will get fairly warm, but should not become 'stinking hot'. If continuous operation is required (eg RTTY), larger heatsinks will be required.

During on-air operation, the input signal must be kept at just sufficient level to give linear operation, as over-driving may cause splatter on SSB, or clicks on CW. After some minutes of operation, it may be noted that I_{dq} sneaks up to about 300mA. In practice it should be found that I_{dq} drops back to about 200mA during receive periods.

The ammeter in the DC supply line provides a valuable drive and tune indicator. When the output is terminated in a 50 ohm resistive load, it will be noted that I_d rises in direct proportion to CW input drive up to about 2A, then levels off. Any further drive only pushes the amplifier into the non-linear region. An unprocessed SSB signal should flick the ammeter up near 2A on voice peaks, but the average level should be only about 1A.

If an oscilloscope is available, check the SSB waveform and confirm that no flat-topping (and hence splatter) is occurring.



PWB Layout for Mosfet Linear Amplifier

Dummy Load

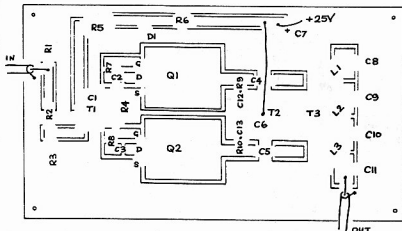
Shown is a suggested dummy load if you do not already have something for the job (due to their non-linearity, ordinary lamps are not very good for this application, and large non-inductive resistors are now very scarce). Seven ordinary 1W carbon or metal film resistors, each 470 ohms, two 390 ohm 1W resistors and a 6V/150mA lamp are connected as shown. Leads should be as short as practicable. As is, this load will take 25W at 50 per cent duty cycle in short bursts. It would be a good plan, however, to house the load and lamp inside a glass jar with a suitable connector fitted to the screw-top lid. To increase the dissipation capacity, the jar should be filled with some benign clear oil such as paraffin or peanut oil. Leave an air gap for expansion.

Problems

If, after unsuccessful attempts on your part, the amplifier will not work satisfactorily, please write to me about it, and any reasonable amount of assistance will be extended (SASE please).

Parts

The components for this project, including \$1 Mosfets, were purchased from



Component Locations - Mosfet Linear Amplifier

Truscotts Electronic World ((03) 723 3860. Will answer mail orders). Stewart Electronics ((03) 543 3733) can also supply many of the parts, including Amidon cores and mica capacitors. Other suppliers of Amidon regularly advertise in this journal.

References and further reading

1. *Power Mosfet Transistor Data Book* — Motorola
2. Gottlieb, *Solid State HF Power* —

Reston Publishing Co.

3. Butler VK5BR, *Power Amplifier Using Mosfets* — AR Nov '89
4. Hayward & DeMaw, *Solid State Design* — ARRL
5. Diamond VK3XU, *Mosfet Power Amplifier* — AR Oct '88
6. DeMaw W1FB, *Power FET Switches as RF Amplifiers* — QST Apr '89
7. Hayward W7ZOI and Damm WA7MLH, *Technical Correspondence* — QST Nov '89

ar

Technical Correspondence

"1GHz Frequency Counter Modifications" by Chris Skeer

I read the above article, published in September 1990 *Amateur Radio*, with great interest and would like to add a suggestion. I have been constructing a frequency counter based on a Z80 microprocessor and it is nearing completion. The designer recommended as prescaler a Telefunken U664B (+64) and warned against using its stable-mate the U664BS. This latter device is designed to oscillate in the absence of an input signal in the manner indicated by Chris in his article. Obviously this is most undesirable in a counter prescaler,

but useful in phaselocked loop applications.

The U664B doesn't oscillate in my counter and I suggest that there may be a U864B which also doesn't oscillate and may, therefore, be used as suggested by Chris but without the fiddling with input biasing which probably reduces the sensitivity. My U664B divides reliably with 8mV RMS into 50 ohms approx at 990 MHz.

Keith Gooley VK5BGZ
Torr-Crest, Tenafate Crt
One Tree Hill 5114

ar

VHF Communications Magazine

1991 Issues Will Be Available After All!

The VHF Communications Magazine will now be translated and published in the UK, and will be available through subscription with the WIA, the Australian agents.

The 1991 prices are as follows:
Surface Mail \$35
Airmail \$48

Please forward your cheque to
WIA, PO Box 300,
South Caulfield Vic 3162
before 31st January, 1991 to ensure you receive your first issue for 1991. Separate cheques for WIA subscription and VHF Communications Magazine renewal please.

Commodore C-64 Overheating Problems

BY PETER McADAM VK2EVB

THIS ARTICLE IS WRITTEN in conjunction with the author's previous article relating to problems experienced with C-64 power supplies (AR Nov '90, p20). During investigations into similar symptoms to those described in the last article, further faults in different computers made their appearance during 24-hour test periods. The first thing that was apparent upon opening the computer case was the quantity of heat or hot air that was trapped inside. Also some chips notably the VIC chip (U19-6566/6567 or 6569) were too hot to touch for any period, and the SID chip (U18-6581) was almost in the same category. In some cases, these "ICs" have just failed without an apparent cause, presumably due to overheating.

The colour Video Interface Controller 6567 has a form of heatsink built in the design layout of the older model computers. This is composed of an integral shield enclosure-cum-heatsink with a snap-off lid. On the inside of this lid, a springy paw extends down and contacts the top of the VIC chip to dissipate heat. To start with, this contact often has dry heat conductive paste on it which renders it a bit useless. Secondly, the top of the lid is perforated to allow heat to escape, but the sides of the shields have no hole or vents to allow a convection current to circulate air. The obvious cure was to carefully remove the shield from the circuit board and drill a row of 4mm holes around the sides, as can be seen in the photo. Following replacement of this shield, and a good smear of heatsink paste on the paw attached to the lid before snapping it into place, heat dissipation appeared much improved and hopefully the working life of the chip should be extended. In some cases the VIC chip appeared to fail when extremely hot, but following the above suggestion it was kept at a heat level which allowed it to continue functioning without a new chip being substituted. It was certainly much cheaper than the \$62.46 for a new chip, too. It should be noted at this stage that later models had only a 6567/6569 and an 8701 under a wing roof type cover, and in these models the VIC chip appeared to run a bit cooler, but probably still would benefit from a heatsink glued

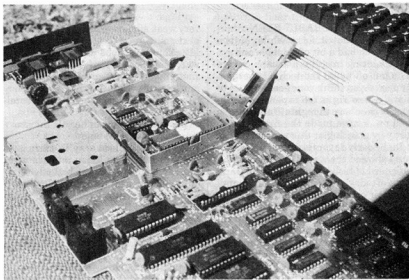


Photo of the Commodore 64 with cover removed

to its surface.

The Sound Interface Device 6581 is another chip that would be easier to care for than replace (\$31.54). As one can see in the photo, a heatsink has been cut out of scrap aluminium and was secured on the back of the 6581 with epoxy resin. This was most beneficial and definitely dissipated heat at a greater rate than the flat top of the "IC" could. Also, the 7812 on-board regulator was provided with a heatsink, although it did not appear to get very hot.

The next move was on the lines of case ventilation. The bottom of the case had plenty of air intake, but the top had very little in the way of effective exhaust vents. The answer, naturally, was to drill a row of 5mm holes right along the back shoulder of the case to provide decent ventilation. Again a convection current would result, causing a movement of cooler air into the computer, thus cooling it. It should be noted at this stage that some computers will have the metalised cardboard shield inside them and the author detached this and disposed of it, as it appeared to do very little anyway, other than trap heat. If you have a hash prob-

lem in your receiver generated from the computer, chances are that earthing the computer chassis, as well as your radio, would be more effective in reducing hash than the metalised cardboard shield. If you decide to retain the shield, perhaps it could be perforated to allow air flow.

What I have heard, but not experienced yet, is that the old 1541 disk drive with the built-in power supply has a heat problem too, and sounds like it needs some help with ventilation also. The newer 1541 MKII disk drives have been designed with an external resin-filled power supply to presumably overcome the problem.

The opinion that "effective cooling prolongs component life" is not only held by the author but is known to be a major factor in successful electronic equipment design, even in this day of modern solid-state circuitry. Also, once again, remember that the Commodore C-64 is extremely susceptible to mains noise/surge so protect your equipment with a power surge protector/filter. It may just stop your computer locking up every time the fridge or washing machine starts or stops.

ar

Getting Started with Amateur Radio Satellites — Part 1

(This is the first of an eight-part series on this topic. Ed)

BILL MAGNUSSON VK3JT
359 WILLIAMSTOWN RD
YARRAVILLE 3013

YOU'VE PROBABLY BEEN thinking about it for a while. Maybe even had a bit of a dabble and got disappointing results. Perhaps you've been put off by all the technical jargon. Or maybe you think your gear isn't up to it and a new rig is too expensive. Well, none of the above thoughts is unusual, so read on. You've made the first step already by glancing at this article.

In the early days of broadcasting, amateurs showed the way. They were in the vanguard of technical development, and many of today's radio broadcasting giants had their origins in amateur radio.

The popular belief is that these days radio hams can't contribute to technical development. Well, think about this. The first amateur satellite was built and launched only four years after Sputnik. And it worked first time, which is more than some commercial groups can claim. Amateur satellites like Oscars 10 and 13 are closely watched by commercial radio communications companies. Their R&D departments monitor the performance of these birds and are not backward in stepping forward with expensive bits to test in our amateur satellites. The Oscar-13 team was given a special radiation-hardened memory chip worth around \$100,000 by a manufacturing company in the USA. A very generous gesture, for sure. But what is a free, orbiting test platform worth to their R&D team? A recent news item has revealed that no less a company than INTEL is developing a series of micro-satellites as part of a global paging network. Amateurs have been developing microsats for many years. Four were launched in one shot early this year, along with two UoSats designed and built by Dr Martin Sweeting G3YJO and his team at University of Surrey. There is no doubt that companies like INTEL watch these birds closely.

You can take part in this exciting up-front area of amateur radio if you are prepared to hasten slowly.

Two pieces of advice before you even think about giving it a go.

1: If you live in a noisy location you can just forget about it. The first thing to remember is that you are dealing with

very weak signals; which brings us to the next point.

2: You have to be prepared to give it your best shot. Even if it's a very simple shot. I don't know of anyone who has done much good with a haywire setup. They generally give it away (blaming the satellites, of course).

If you think you can handle the above points, read on and enjoy.

Probably the best way to start is to have a really good listen and see what you can hear. This is not bad advice for any amateur radio activity! Now you'll need to know a few things before you waste a lot of time.

You'll need to know what it is you're listening for.

You'll need to know what frequency to listen on.

You'll need to know when to listen.

You'll need to know what equipment to use.

Let's look at these points one at a time. What are we listening for? You must realise there are lots of satellites up there. We'll start by looking at DOVE (Oscar-17), is the 17th Oscar to be put into orbit. DOVE will be our first satellite of the month. Why DOVE? Well, its signals are as strong or stronger than most. It's not a complex satellite. Essentially it has only a telemetry beacon and a digtalker. You won't make much out of the telemetry unless you have a packet radio setup, but you should be able to hear the digtalker with very simple gear. This is a computerised voice simulator and is responsible for DOVE's name. It's called a Digital Orbiting Voice Encoder; how about that?

The signal from DOVE sounds like a regular buzzing noise interrupted by bursts of irregular buzzing. Rather like a packet radio signal with an 'idling' tone in between. It switches itself off completely for 30 seconds every couple of minutes. This is to allow the control stations to communicate instructions to the satellite. It is a narrow-band FM signal.

You should listen on 145.825MHz. This frequency is a common one used by a number of amateur satellites for their downlink data. Downlink, of course, is

the term given to the data or whatever coming down to your station from the satellite. There's your first bit of jargon, hi. Now, here's another important bit of jargon. You'll hear it regularly. It's regarded by many people as quite mysterious, but it's not. I refer to Doppler shift. It has to do with the frequency of the satellite signals. The best analogy is that of a train blowing its whistle as it rushes through a station. An observer on the platform (hopefully not waiting for this particular train) would notice that as the train speeds into the station, the pitch of the whistle is rather high. On passing the observer, the pitch of the whistle appears to drop to a rather lower frequency. This is caused by the train's velocity being first added to and then subtracted from that of the sound waves from the whistle as it speeds through past the observer. A satellite in orbit around the earth also first comes towards and then goes away from the observer. The satellite's velocity first shortens the wavelength of the signal as it comes towards the observer and then lengthens it as it heads away after passing close to the observer's QTH. All this means that when you first hear the signal it will be on a slightly higher than normal frequency and, as it passes by and moves away, the frequency will drop to a lower than normal frequency. The amount of Doppler shift depends on the nominal frequency, the velocity of the satellite and its position relative to the observer. In the case of DOVE and most of the other amateur satellites downlinking in the 2m band this amounts to about plus and minus 3kHz. So you should start listening for DOVE's signals at about 145.828MHz. As the satellite progresses through its 'pass' — there's another bit of jargon — you will have to follow the signal down to about 145.822 MHz. You will probably already have realised that the frequency will be exactly 145.825MHz when the satellite is closest to your QTH. At this point there will be no relative velocity and therefore no Doppler shift. It is well to note that an overhead pass, ie an orbit that takes the satellite directly over the observer, will produce the maximum Doppler shift, whilst a pass that appears

low in the sky may produce barely noticeable Doppler shift. Think about it. If your set can't tune in 1kHz steps, don't worry, just leave it tuned to 145.825MHz.

Now, when do you listen? This is a tricky one. If you have a computer, there's no problem. There's no shortage of programs and data to tell you when to listen. Use of computers in amateur satellite work is a subject on its own and will be covered in future articles. If you haven't got one, don't despair, ask someone who does have one. In most areas there will be a group interested in satellite operation. Don't be afraid to break in and ask for information. Once you know the exact time of one pass you can work out the time of subsequent passes very easily. Going back to the time of Oscars 6, 7 and 8, not many hams had a computer. Come to think of it, not many individuals or organisations had a computer. All calculations were done on paper. DOVE has an orbit period of one hour, 40 minutes and 46 seconds. This is the time it takes to do exactly one orbit of the earth. Its orbit takes it almost over the north and south poles; it is in a circular, polar orbit. If it

wasn't for the rotation of the earth the satellite would come back over your QTH after one hour, 40 minutes and 46 seconds. But the earth does rotate, so the passes 'advance' around the earth from east to west. So the first pass you will 'see' will be in the eastern sky, probably quite low. The next pass may be almost overhead and the last pass (there are usually three in each set) will be in the western sky. You should hear three passes in the morning between about 7am and 10am, and another three passes each night between 7pm and 10pm.

Now, equipment. To simply listen to the signals all you need is a good 2m FM receiver and a ground-plane antenna. The signals from a setup like this won't be strong but you will hear them and, if the digtalker is operating, the signal should fully quiet your receiver. DOVE's telemetry transmitter normally runs at 250mW and, when the digtalker is on, it runs at 4W. That's about a two 'S' point improvement. A quarter-wave ground plane is better than a high-gain co-linear type vertical like a Ringo. The quarter wave will receive better when the satel-

lite is high in the sky. Make sure you use your best bit of coax for the feeder and terminate correctly at both ends. Don't skip here, this is your first lesson in giving it your best shot.

I don't want to put your hopes up too much, but I have heard UoSat-2 digtalker fully quieting on an ICOM IC-2a hand-held with its rubber ducky antenna. UoSat runs about 340mW. I know what I said earlier about weak signals and noisy locations, but remember we are just listening to hear the signals so far. If you tried to decode data or communicate using simple gear like that you would be sadly disappointed.

Listen in to the AmSat Australia net each Sunday night at 1000z on 3685kHz. It is excellent value. It's conducted by Graham VK5AGR. Call in to the net if you can. Call-ins start at about 0945z. The net moves to 40m in summer.

The next article will deal with orbit types. Satellite of the month will be UoSat-2. We'll take our simple station one stage further to look at easy methods of tracking with small Yagis.

ar

The Story of a Window

BY VK8** AN EX-WRAN

THE BEAUTIFUL STAINED glass window in the Naval Chapel at Garden Island, Sydney, commemorates not only the Women's Royal Australian Naval Service, but it also remembers Mrs Florence Violet McKenzie. Mrs Mac, as she was known to thousands of men and women, became a silent key on 23 May 1982.

The window features two WRANS, one in a wartime navy blue uniform with red badges, and the other in the peacetime white summer rig. The rich heraldic style border around the top and sides with rope intertwined, shows every category of badge worn by WRANS over 40 years of service. Across the bottom are the rank badges, linked together in a 'chain of command'.

Mrs Mac's WESC (Women's Emergency Signalling Corps) badge has a place of honour on the lower left-hand side. It appears as a nucleus which expands gradually in a blaze of beautiful marine colours to the Naval Crown in the arch at the top.

On 7 June 1985 the WRANS had ceased to exist. Those serving after that date were to become part of the Royal Australian Navy.

About this time, the RAN was encouraging Naval Associations to provide stained glass windows to enhance the entrance to the historic Naval Chapel at Garden Island. The ex-WRANS set to

and established a WRANS Commemorative Window Committee, and with Jess Scott Doyle (nee Prain) as convener, they began the enormous task of planning the design, raising funds and of ensuring that the window would be completed in time for the 75th RAN celebrations of 1986.

It was a wonderful team effort by the Window Committee, with everyone doing her job magnificently.

Donations came in from all over Australia, from New Zealand and overseas. They came from men and women who held Mrs Mac in high regard; they came from those she had trained before and after the war.

An extract from the ex-WRANS Ditty Box tells part of the story:

"I wrote to a gentleman in Nova Scotia (now a professor of Maritime Law) who sent a charming letter and a nice donation. Another sent a donation from Tasmania.

Amongst others I contacted were members of the Airline Pilots' Association, Marine Pilots from NSW, Port Phillip and Torres Straits Service, and the company of Master Mariners, and the Institute of Navigation. They all had tales to tell of their involvement with Mrs Mac, and the members of the Institute of Navigation were especially pleased to donate to our window, as Mrs Mac was one of their foundation members.

How good it was then, when we talked to the artists at the Celtic Studios, that they immediately understood how we felt, and chose Mrs Mac's WESC badge to be the linchpin of their design, with all the lines emanating from it throughout the window. She never wanted to be eulogised, but I am sure she would have appreciated that little badge in our beautiful window."

The window is 8ft high and 3'4ft wide and was dedicated by Lady Stephen, wife of the then Governor-General Sir Ninian Stephen.

Six of the original 14 WRANS, "Mrs Mac's girls" were present at the ceremony, five of whom came from different States in Australia, whilst the sixth, Denise Johnson (nee Owen) WRAN No 4, came with her husband from Hawaii.

At the service in the chapel, Jess Prain WRAN No 8, chose to use the Bible of Mrs McKenzie for the reading of the lesson, a fitting tribute to a wonderful lady.

The unveiling and dedication of the window was a momentous event on a magnificent day in a superb setting. It was 21 September 1986.

Mrs Florence Violet McKenzie VK2FV would have been delighted to have been present on that day ... she was there ... remembering quietly.

WRAN No 1240

ar

The Colvins in Australia

STEPHEN PALL VK2PS
PO Box 93
DURAL NSW 2158

Traveller's Tales and DXing

IN A PREVIOUS ISSUE OF 'Amateur Radio' (March 1990) we reported the visit of the famous DXing husband and wife team, Lloyd and Iris W6KG and W6QL.

Whilst in Sydney they gave an 'on air' interview at the broadcasting facilities of the WIA NSW Division at Dural, NSW VK2WI, during the regular Sunday news broadcast. They participated in the 'call-backs' on HF and exchanged greetings, experiences and views with the listeners of the broadcast. Iris and Lloyd were very impressed with the facilities and format of the broadcast, especially with the 'callback' system. They said, "We don't have anything like this in the USA."

A few days later they conducted a long seminar on DXing and amateur radio travel at the Parramatta 'Amateur Radio House' headquarters of the VK2 Division. Here is a brief impression of this remarkable amateur husband and wife team, which — well past retiring age — is still very active, travels the world and activate one rare DX country after the other, to the delight of DXing amateurs world-wide.

The beginning

Lloyd W6KG got his amateur callsign in 1929 — 61 years ago. Iris W6QL received hers in 1945 — 45 years ago. This is a total of 106 years of amateur radio operating time which has produced many records. Those records were described in all their details in a previous issue of this magazine. It is sufficient to say that Lloyd and Iris devoted their life since the early 1960s to travelling the world on DXpeditions. Many countries gave them permission to operate; in some other countries, permission was not forthcoming, so they moved on.

The Colvins are travelling under the banner of the Yasme Foundation, but all their travelling expenses are met by themselves. Lloyd became interested in amateur radio at the age of 12 when he joined the Boy Scouts and learned the Morse Code. Iris, after her marriage to Lloyd, decided that a joint hobby is good for a marriage. She studied and received her callsign shortly after. The amateur radio future started with Lloyd before the Second World War. As a young man, living in Alaska, he bought some 40 acres of land at a very cheap price, and decided to put an antenna farm on it, especially two giant rhombic antennas. Fate de-



Iris W6QL and Lloyd W6KG in front of VK2WI transmitting station.

cided otherwise. The US Army Signal Corps, having seen one of the towers which Lloyd had built, decided that was the site for which it was searching to install its own radio station. They made a financial offer to Lloyd for the land, which he could not refuse. This transaction started Lloyd, and later Iris, in the construction and building business, selling and buying property. These transactions gave them a secure financial base which allowed early retirement and independent means. It gave them time and the opportunity of amateur radio travelling. The real DXing started around the middle of the 1960s.

Yasme

The Colvins travel under the sponsorship of the Yasme Foundation, and this is also the QSL address of the Colvins (Yasme Foundation, PO Box 2025, Castro Valley, Calif 94546 USA). The history of Yasme makes interesting reading. Yasme in Japanese means 'good luck'. This name was given to a small 19ft long self-built boat by a young Britisher, Danny Weil, around 1948. He intended sailing around the world and, after many mishaps, got as far as the American Virgin Islands. Here he met and became friendly with a very famous DXer, the late Dick Spenceley KV4AA. Dick encouraged Danny to become a radio amateur, because through this media he would be able to receive help in his travels, and

would also assist the amateurs to be able to work exotic countries where Danny wished to sail. The deal was done, and Danny did what no other amateur — according to the Colvins — has done before or since. In 30 days, by studying almost day and night, Danny absorbed all the technical and electronic amateur knowledge and passed the amateur radio examination with flying colours, transmitting 20 wpm in Morse. Danny sailed around, and on one of his trips met his future wife in Colombia. They sailed together for a long while, but the elements of the sea were not kind to them. Many times the end was on the reef and a wrecked boat. There were five boats in Danny's life, all called 'Yasme', and all ending up on the bottom of the sea. At his wife's urging, Danny finally decided to give up sailing and, with it, amateur radio, and retired to the land. This was the time when the Colvins decided to go on DXpeditions and approached Yasme for the sponsorship name. Yasme was organised originally by amateurs to help Danny in his travels. Today, the Yasme Foundation Inc is nothing else but a big group of DXing amateurs who are interested in DX and DX operations. It is interesting to note that under USA law, all donations to Yasme are tax deductible. (Do Australian politicians read this column? Ed). Several prominent DXers are directors of the Foundation; the Oceania region is represented by Heather VK2HD, a well-known DXer.

The present trip

The Colvins' latest trip started late in 1989 when they finally received permission to operate from Niger, Africa, as 5U7IL, and from Burkina Faso, Africa, as XT2KG. In Burkina Faso they worked 14,000 stations located in 161 countries in a three-week period. Early January 1990 found them in Bahrain with the callsign A92QL. The Colvins arrived in Sydney at the end of January, as a stop-over to New Zealand. Originally they did not intend to be active, as VK is not considered to be a rare DX country, with so many active DXers. However, after gentle persuasion from friends and with the generous offer of accommodation and antenna facilities by Harry VK2BJL, they decided to have a two-week DX operation here. With the callsign VK2GDD they made over 4000 QSOs and worked 143 countries.

This brings the total of QSOs over the

past three months in four countries to over 30,000. Lloyd and Iris were specially appreciative of the service given to them by the Sydney DOTC office which provided both of them with on-the-spot over-the-counter callsigns.

The Colvins travel according to a well-proven plan. Round-the-world airline tickets with a well-known airline, paid well in advance, which gives them a special baggage concession of 160 pounds each (about 72 kg). The personal belongings for each are reduced to a small suitcase. The radio equipment, including the antenna, is specially packed. A small box with the rotator, many kilogrammes of coaxial cable, fittings and tools. The Hy-Gain TH3 is specially cut so it and the mast fit into a self-designed canvas bag, which is over two metres long and goes aboard the plane as luggage. The rest of the station is carried physically on the plane and stored away under the seats and head lockers. Lloyd carries the 21kg heavy Tokyo HI Power HF linear amplifier; Iris carries the 12kg ICOM 751A transceiver. They never hide their equipment, it is always out in full view, and they have never had any trouble with airline or other officials. Lloyd specially mentioned a few techniques which will help the average amateur to have that rare DX contact. "Listen and listen again," says Lloyd. "Find out the DX station callsign in advance; find out the system by which the DX station is managing the pile-up, transceive or "up 2" "up 3" etc, which can be mastered with the intelligent use of your RIT knob. Pay attention to the calling method: full call or the last two letters of the suffix? Call area? You should call back in the same way as the DX station is calling. Tail-end only after all the information has been exchanged between the two stations. If you have a set with two VFOs, practise well in advance the split system.

"It is remarkable," Lloyd says, "that a very great number of amateurs do not know how to work split frequency with two VFOs."

When on a DX expedition, Lloyd is working mostly in CW mode; Iris uses SSB.

Marooned on an island

At the seminar, the Colvins related their travel experience in more detail and gave their audience the choice to pick the country about which they wanted to hear something.

We found out that when they were visiting Jordan they were able to use the Royal Amateur Radio Club facilities but they missed the royal appointment to see King Hussein. In New Caledonia they had to run a 100m coax cable from their hotel to a neighbouring property where the antenna was located. On the island of Juan Fernandez (the island of Robinson Crusoe) where the radio equipment and the fresh lobsters — carried as freight from the island — ended up in their lap.

On Easter Island the giant stone monuments are all facing inwards watching the graves of their ancestor. In Nepal they met the well known and revered Father Moran 9N1MM. Not so long ago, in September 1989, the Colvins were the first foreign amateurs who received permission to operate from all Soviet republics, using radio amateur club facilities. One of the more personal experiences was told by Iris.

They went by boat to Ebon Island on the southernmost part of the Marshall Island group, about half a degree north from the Equator. The trip was planned to be of two weeks duration, so they carried all the necessary equipment and stores with them, including petrol for the generator. It was an old copra boat which plied its trade between the islands collecting copra from the inhabitants of these outlying islands. Ebon is a primitive Polynesian island with no stores or other facilities, and the natives follow their old traditional life. After the two weeks the copra ship did not return. It was only then that the Lloyds found out what happened. As the ship paid the natives for the copra only with money, and not goods on the old barter system, the natives told the ship not to come back. It was obvious that money was of no great value to the inhabitants when it can't be spent. The Colvins were marooned. With the little petrol they had left, they managed to get the radio going and arranged some emergency transport to come near the island in the future. For two and a half months they were waiting for the ship to come by. They spent the American Thanksgiving Day and Christmas on the island. This was an interesting society; it was a matriarchy. The women were the most important members of the society; they owned all the property on the island, including land. Men took the name of the women when married. At the end of the first two weeks, the women came chanting as a group to see the Colvins, and brought food. From this instant, the Colvins were accepted as part of the social life of the island and shared in the fishing catches. The food had to be eaten on the same day, as there was no way of preserving it. On their way to the island somebody had given them a handwritten dictionary of the native language, and this dictionary was a great help to them. When the boat finally arrived to pick them up and take them back to a more modern lifestyle, all of them had tears in their eyes.

At the end of the seminar at Radio Amateur House in Parramatta a small presentation was made to the Colvins on behalf of the VK2 Division, and they were given the Honorary Membership Certificate of the VK2 Division.

The Colvins left Australia on 8 February for New Zealand and, upon arrival, became immediately active with the callsign ZL0AKH. They intend to spend four weeks in ZL before proceeding to Tahiti and then back to California, USA. **ar**

1991 WIA Australian Radio Amateur Call Book Out Now

Over 18100 Current
Callsign Listings Plus
Band Plans,
RepeaterXCC, etc.

**LIMITED
STOCK!
SELLING
FAST!**

Buy your copy NOW from
your WIA Divisional
Bookshop.

**Cover Price \$11.00
Special Price to WIA
Members of \$9.50**

ALL PRICES are plus
Postage and Handling

**DO NOT
MISS OUT!**

The AUSSAT ATV Test

TIM MILLS VK2ZTM
c/o PO Box 1066 PARRAMATTA 2124

HISTORY WAS MADE FOR Australia and perhaps the world when the television test transmission of VK2TVG the Gladesville Amateur Radio Club was relayed through a satellite transponder of AUSSAT, Australia's national satellite carrier.

The AUSSAT management offered the facility to the club after it had become aware of the weekly ATV test transmission on UHF TV Channel 35.

A transmission date of 14 November 1990 was set, and in the few weeks available a lot of arrangements had to be completed. There were links to AUSSAT to be found, ATV groups to contact for material and publicity to inform Australian amateurs generated. A transponder with a south-east Australian footprint was made available, 12 Watts on A2-T5. Word came back that some ATV groups were preparing material, and they and others were setting up re-transmission facilities.

The link was the hardest to organise. An input to AUSSAT was available at the nearby North Sydney TAFE College at Gore Hill, but no clear path. This was finally solved by the assistance of the ABC, which was able to provide a one-hop link to its tower with a split from there to the TAFE. It was discovered as the night arrived that the split went everywhere, including TCN Channel 9, which was going to edit live segments of the Gladesville transmission for inclusion in that night's Clive Robertson's "World Tonight" news program. There were two segments totalling four and a half minutes duration, a wonderful piece of PR for amateur radio.

The countdown to 7.30pm approached. From 7pm there was a test card radiated via AUSSAT and the local Ch35, VK2RTV. At 7.25pm the introduction segment, featuring the South Australian Quorn train museum introduced the test transmission in sound and vision to the as-yet unknown audience.

At 7.30pm it was live to air as Doug VK2XGX welcomed Australian amateurs to the history-making event. Doug then introduced Mr Graham Gosewinckel, the Managing Director of AUSSAT, to the studio and invited him to address the viewers. Mr Gosewinckel said it gave his organisation great pleasure to make this facility available for the test, for it was from radio amateurs that a country's technical support originated.

The introductions over, it was time to present a couple of segments from the Gladesville AOCPTaped lectures to illustrate the club's involvement in educating the future amateurs. This was followed by the first ATV group contribution. It was also time to call for signal reports to see if there were any viewers. Indeed there were, and by the time the transmission concluded 139 had been logged, mainly by phone, local repeaters and a few by 80m. Perhaps not the best choice of frequency as sunset was only just occurring. A special QSL card is being sent to those supplying signal reports. (A few phone SWL reports did not advise an address. They may care to contact GARC with an address if they require a card).

Reports on the AUSSAT signal included major areas like Brisbane, Lismore, Newcastle, Central Coast, Sydney, Orange, Canberra, Wagga, Hobart and Adelaide. A problem occurred which prevented the re-transmission in Melbourne — a recording was made and subsequently re-transmitted. Single reports were received from country regions of NSW, Victoria and northern Tasmania. There were a couple of reports from Melbourne and Western Australia. The spot beam toward Perth from the satellite allowed reception on larger dishes and a recording was made and has been played in Perth. The spot was narrow as nothing was received at Albany. All reports received were acknowledged live on air, usually by Tim VK2ZTM, the second presenter.

Groups from Brisbane, Central Coast, Melbourne and Adelaide provided tapes. The WIA and ANARTS provided news segments, VK2 President Roger VK2ZIG and Councillor Roger VK2ZTB provided live interviews. There were taped samples of the Gladesville AOCPT lecture tapes and an item about the work and function of the IPS.

All too soon, the three-hour allocation was used up, so it was time to wind up the transmission. A small seven-minute overrun caught those using the VHS format.

This test appears to have re-awakened an ATV interest throughout Australia. It would appear that the interest extended to the industry as well as the amateur radio fraternity, judging by the feedback to date. The Channel 9 World Tonight segment involved the general public. AUSSAT has offered a second test, and this has been scheduled for 30 January

1991. It will be dependent upon a more permanent arrangement for a link to AUSSAT at Belrose from VK2TVG at Lane Cove. The Divisional broadcasts will confirm the arrangements and transponder. Would the various ATV groups keep their reception and re-transmission facilities at the ready?

Tom VK2ATJ will be covering the reporting of the first transmission in words and pictures in the amateur media over the next few months, so watch for his reports.

This operation proved to be an interesting exercise in communications, even if it is our occupation and, to some, a hobby. There was little time after the date became available for publicity and the only amateur press with the time frame was "Amateur Radio" which carried the release in the November issue. The other method was sending the news releases to divisions, ATV groups and the weekly WI broadcasts. Thanks to all who assisted.

The NSW Division of the WIA was pleased to have been able to assist and promote this milestone in amateur radio. The real thanks, however, must go to Gladesville ARC and AUSSAT for getting together and making it happen. Thanks also to the ABC and North Sydney TAFE, the ATV groups, you the viewer and the host of amateurs involved in all aspects of the production. Finally, to Keith VK2ZZO, the TV co-ordinator for Gladesville, who anchored the whole operation — thanks, Keith. **ar**

Prevent Pirates

Make sure you
sell your
transmitter to
a licensed
amateur

The Case of the Disappearing Microwaves

DAVID G BARNEVELD VK4BGB
PO Box 275 BOOVAL 4304

FOR THOSE OF YOU WHO have read some of my previous articles, you could be forgiven for thinking that I am a walking disaster area. After reading this one, your assumptions will be confirmed. However, life has its moments, and a few personal stories conveyed across bring a little bit of humour into our everyday lives.

This story concerns microwaves. Not the type radiating from a waveguide on a television link, but rather those entering your favourite piece of roast pork. You guessed it — the humble domestic microwave oven. The story unfolds during the summer of 1986; whilst in the process of building a new house, my wife and I moved into a small self-contained brick flat. To say that this flat was a hot box is an understatement!

During the trauma normally associated with moving camp, we purchased a brand-new microwave oven. The following day, my wife fixed lunch for us prior to our going out for the afternoon. As can be expected at this time, there were not many pieces of kitchenware unpacked, so a large 500g slab of butter, which had been unwrapped for lunch, was placed on a small plate at the dinner table. During the exercise of clearing the table after lunch, I placed the plate containing the butter on top of the microwave oven which, incidentally, sat on top of our new refrigerator, and promptly forgot about it.

During the course of the next few hours a minor calamity occurred. I say minor, because what followed, as you will read about later, can be described as a full-scale disaster. What had happened was, that during the course of the after-

noon, the temperature inside the flat had risen to almost 100°F and, you guessed it, the butter had melted into a large yellow liquid puddle.

Unfortunately, being on a small plate, the yellow flowing mass had nowhere to go except over the sides of the plate and straight into the ventilation slots that were located on the very top of this particular brand of microwave oven.

After recovering from the original shock, it was decided that a salvage and clean-up job would have to be implemented immediately. Once the top covers were removed it was a huge relief to discover that the melted butter had not fallen on any critical components, but rather had followed a groove under the lid and congregated in a puddle around the inner base of the unit. What a relief! All I had to do was find some way of degreasing the butter and it would be plain sailing from there on. Being employed with the State Electricity Commission at the time, I decided to contact a good friend of mine in the maintenance workshop for some advice. I didn't like the idea of pouring hot soapy water around the inside of the oven if I could help it.

After explaining the situation, my friend was most sympathetic and said he knew just the gear for the job. It turned out the gear was a super-dooper degreasing solvent supplied in 200-litre drums. The main use for this solvent was cleaning 275,000-volt ceramic insulators on electrical transmission towers. A little bit later, armed with five litres of the goodies, I set about the huge clean-up job. As a small amount of butter had solidified under the oven cavity, some means

would have to be devised to squirt the solvent around in these tight places. I had just the very thing: a degreasing wand with suction line that was placed in the five-litre drum of degreaser. The pressure was supplied by my trusty 10cfm air compressor. The oven with all covers removed was placed on a wooden box in the back yard and away I went. With an ear-deafening blast the solvent was sprayed around the interior of the oven. A bit here, a bit there. It was working like a dream. Every bit of butter that could be seen was melting away. For that matter, so was everything else! Everything in the entire oven that was made of plastic or similar compounds was literally disappearing before my very eyes. Even the front door and control panel melted down. I'm not kidding folks, this is a true story!

The solvent literally melted down my new microwave oven in seconds. The only thing left was a mass of gooey plastic residue and a metal cabinet. I did manage to salvage the plate transformer out of the wreck, although not much of a consolation prize.

My friend (or should that read enemy) almost choked to death holding back a fit of laughter when I told him the story. "You told me you wanted to melt butter!" he retorted. "You didn't say anything about plastics." He's right! I should have done more research before spraying madly away.

The lesson to be learned from this episode is, if in doubt, test a little bit first. If still in doubt — don't!

I leave you with this thought: If your microwave needs a cleansing, don't call me!

ar

Second Gladesville/AUSSAT Test

A second ATV test is being planned via an AUSSAT transponder for Wednesday 30 January 1991. Details have not been finalised, but it will be a similar format to the first test which took place on 14 November 1990. The theme this time is to be WICEN, and the various groups throughout Australia have been asked to contribute a seg-

ment.

You should monitor progress of this test's arrangements via your Divisional broadcast, if conducted during this month or via VK2WI — see page 3 for times and frequencies — on either the morning or evening transmission.

The various ATV groups are again asked to receive and re-transmit the

AUSSAT signals through their local ATV repeater or simplex facilities. It is possible that a national coverage beam may be used. For contact information and other details see the Club Corner column in November "Amateur Radio".

DE TIM — VK2ZTM

ar

Scout Radio Station Needs Operators

KEITH ALDER VK2AXN
2 EULBERTIE AVE
WARRAWEE 2074

BACK IN 1987 SOME FRIENDS who are active supporters of the Scout movement asked me to help with advice on setting up an amateur station for training purposes and to communicate with other Scout groups worldwide. The site for the station is the Scout Activities Centre at Bankstown, a south-western Sydney suburb.

After I listed what they would need in equipment, space, power etc (including lots of options and alternatives) there was silence for a few months, after which I received a phone call — "well, we have set up the room just like you said, and raised the money for what you think we need — now, would you like to buy all that and install it for us, please?"

That took quite a while — we bought most of the gear second-hand through other amateurs (and ads in AR). Some was donated by friendly amateurs. In the meantime we made the necessary enquiries of DoTC about licensing conditions — there is a special block of callsign suffixes for Scout stations.

The only really difficult decision was how to put up the main HF antenna. We wanted a beam, preferably a tribander, but how to hold it up in the air? Whatever mast or tower was used had to be erected on top of the two-storey building housing the Activities Centre — which, fortunately, has a flat metal roof, but a couple of quotes from commercial tower providers soon showed us the answer wasn't easy. The quoted erection costs were more than the purchase price and the sum greater than our total budget!

Eventually we solved the problem another way. Being a keen sailor, I know a couple of shipwrights who get me out of trouble periodically, so we put out enquiries for a second-hand aluminium yacht mast, and in due course acquired a repaired mast from a "5.5" yacht, together with all its rigging — halyards, shrouds, cross-tees — and, in fact enough discarded rigging from other yachts (after little racing accidents!) to give us a mast, with all stainless-steel guys.

The top of the mast needed a few mods to fit the rotator, and we had to install a boat trailer winch to haul it up, but we finished up with a 40ft solidly built mast

for less than the cost of the beam. (The most expensive single item was transport of the yacht mast to the centre).

The station was duly licensed in February 1988 with the callsign VK2SCB (Scout Centre Bankstown). It has the following equipment:

Yaesu FT757GX HF Transceiver
Yaesu FT901 HF Transceiver
Kenwood TW4100A 2m & 70cm
Duobander
Yaesu FRG7700 General Coverage Receiver

In addition to the rotary beam there is a trapped dipole for 40 and 80 metres, a Butternut five-band HF vertical (both donated), separate 2m and 70cm verticals, and a separate receiving antenna for the FRG7700. We also have two scanners with their own antennas, mainly for listening on the "air band" because the Centre is also involved in flight training.

Some other equipment we had donated includes an oscilloscope and a crossed-needle SWR and power meter, now set up for continuous monitoring of HF transmissions, and a couple of multimeters and test oscillators. Another amateur gave us an automatic Morse keyboard, potentially useful for code training.

So there it is — a well-equipped station ready to be put on air whenever a licensed operator is available. And now we come to the sad part — despite the best endeavours of all concerned, we have been unable to find enough volunteers to operate the station. I can go there on weekdays — there are senior scout officials working there most Wednesdays and Fridays — but we need operators for evenings and weekends, when Scouts are free to attend. I am too far away (and, let's face it, too old!) for evening duty there, and otherwise committed in weekdays.

We did manage to be on the air for JOTA in 1988 (thanks to VK2s DEJ and JJM) and again in 1989 thanks to VK2s KDJ, ENU, AML and KKV.

Perhaps I should add that the youngest members of our team which has put this Scout Activities Centre together are in their late 60s and we are all wondering whether or not there are a few young enthusiasts out there who are willing to

volunteer a bit of spare time in a good (and enjoyable) cause. You don't have to be a Scout — I wasn't. (At least not for the past 55 years, though I've just been reinstated as an honorary Scout as a result of the labours at Bankstown).

Also, you don't have to be prepared to give instruction, though that will be very welcome if available. Demonstration is the first requirement; come and work a bit of DX in front of an admiring audience!

If you feel that you can help, please contact me, QTHR and phone book for the past five years — or, if in range of the Hornsby club repeater VK2RNS, 147.250MHz, look for me on or after our weekly club net, which I run from 8-9pm local time Monday evenings. Please help if you can!

Profile

Keith Alder VK2AXN started building radio sets in the early 1930s and was introduced to amateur radio in 1938-39 by Ron Williams SK, then VK3ZD, Ed VK3EM, and the Scotch College Radio Club. He did not return to it after the wartime shutdown for 39 years, until realising in 1977 that retirement was coming up fast and he'd "rather like to do that again".

Things had changed somewhat in the meantime; there was this mysterious thing called SSB, and all his valves seemed to be obsolete in the face of solid-state devices. So he started all over again, brushed up the code, and re-qualified with a new AOCIP in 1978.

In the meantime he graduated in metallurgy at the University of Melbourne, worked twice in England for a total of six years in nuclear metallurgy, and spent a few years as a university and tech college lecturer in Melbourne and Newcastle.

He was the Head of Metallurgy when the Australian Atomic Energy Commission started the Lucas Heights Research Establishment in the 1950s, and became its director in 1961. Later he was a Commissioner and finally General Manager before retiring in 1982.

Keith is a Member of the Order of Australia and a Fellow of the Institution of Radio and Electronic Engineers Australia, and of the Academy of Technological Sciences and Engineering.

He is a member and past president of the Hornsby and Districts Amateur Radio Club, with principal interests sailing and going maritime mobile on his H28 ketch, and building his own equipment. **ar**

More About "Krait"

THE SHIP'S OPERATOR TELLS THE STORY

I WAS INTERESTED TO READ the mention on page 6 of AR October 1990 concerning the W/T equipment fitted aboard the wartime raider "Krait" which took part in the attack on Japanese shipping in Singapore harbour in 1943.

Perhaps your readers may like to know a little more about the communications arrangements and some of the problems that beset the naval radio operator, who incidentally, was a licensed Australian radio amateur operator, on that somewhat unorthodox voyage.

"Krait", a previously captured Japanese fishing vessel, sailed from the United States submarine base at Exmouth Gulf on 2 September 1943 for Singapore waters via the Lombok Strait, which runs between the islands of Bali and Lombok. On arrival at the target area, three two-man canoes were launched which attacked vessels lying at anchor in both the roads and harbour area of Singapore with magnetic limpet mines, resulting in the destruction of six merchant vessels and one large heavily laden tanker. Both "Krait" and her complement of 14 souls returned to Australia unscathed after a particularly tension-filled trip.

As to the communications equipment, it is true that the vessel was equipped with a complete AT5/AR8 station, including the companion battery-driven motor generator unit. The set was installed in No 3 hold which had been converted from a fish-hold to a W/T office and operations room, and at the same time provided sleeping and living accommodation for three officers. The dimensions of the room were, width approximately 9ft, length 8ft and ceiling height about 5ft 6ins. Persons entering the room had to remain in a stooped position or be seated!

International single-operator period watches were maintained on a daily basis, listening being carried out on discrete naval radio frequencies. When off watch, the operator was required to clean his weapons, which comprised a Smith & Wesson 38 revolver, an Owen machine gun and sundry other bits and pieces. As required, look-out duties were also undertaken — not too much time off to enjoy the balmy tropics.

The antenna system was a simple inverted "L" running from the main-mast which was some 20ft high, to a smaller mast of the order of 10ft high placed on the after engine-room canopy; the total

aerial length was approximately 60 ft.

Needless to say, this antenna installation was not intended to last. It underwent some quite drastic pruning when "Krait" arrived about 60 miles south of Singapore. The main-mast was felled to reduce the vessel's profile and thus make her more difficult to detect by other surface craft. It also meant that the lookout seated atop the wheelhouse, which was approximately 8ft above the water-line, could now see any hostile surface craft approaching before it could see our vessel — thus providing ample time to take evasive action. The loss of the mast, of course, had a dramatic effect on communications — there was virtually nowhere to string an antenna! The problem was overcome to a degree by running a jury rig just beneath a wooden rail running around the sides of the vessel. It was fine for concealment, but radiation efficiency was very much diminished, notwithstanding the large sheet of copper that had been stretched along the ship's hull for earthing purposes. The physical aerial height was now some 8ft above the water-line at the fore-castle end, falling to about 3ft at the lower end near the ship's wheelhouse; the total length was approximately 30ft. Even though the jury aerial was almost permanently wet from seas breaking over the ship's bow, it was still possible to receive signals from Australia at copy strength while naturally signals from Japanese stations remained at S9.

Only one message was transmitted during the entire voyage. It was sent in the afternoon of 15 October 1943 when the vessel was some 100 miles clear of Lombok Strait, heading back to Exmouth Gulf. Although VHM Coonawarra was the first station called, there being no reply, VIX0 gave a "K" and the following text was transmitted at high speed, "For Australian Commonwealth Naval Board priority immediate — mission completed — for Admiral Christie Lombok now patrolled — ETA pm 17th AR". A simple transposition code gave some security to the message.

The significance of the text was to inform the Special Operations hierarchy that the mission, which had the most slender chance of success, had indeed succeeded and that Admiral Christie USN had better do something pretty quickly to warn his submarine commanders that one of their favourite routes into the Java sea area was now subject to Japanese patrol craft, and that home sweet home

was scheduled for 17 October.

In conclusion, the AT5/AR8 equipment didn't miss a beat, although the fuse department of the power supply required constant maintenance due to the ever-present sea-water sloshing around the floor of the W/T office, wetting the paxolin strip that contained the fuses, causing it to smoulder. After much scraping of burnt paxolin, the voyage ended with the fuses mounted in mid-air and simply supported by their connecting wires. The AT5/AR8 was all that was aboard, plus a couple of sets of spare valves and a few spare fuses; there was no back-up equipment, which probably says something for the reliability of the Australian made equipment. For light reading during the quiescent hours, the radio operator had taken with him copies of the Admiralty Handbooks for W/T parts I and II, 1938 edition, together with his home-brew multimeter. Needless to say, the handbooks remained unread for the duration of the voyage.

HORRIE YOUNG VK2AMZ
371A ORANGE GROVE RD
WOY WOO 2256

Note: Horrie, who is a life member of the WIA, is too modest to reveal that he himself was the operator! Ed. **ar**

**THIS SPACE
COULD BE
EARNING YOU
MONEY!**

**ADVERTISING RATES
AVAILABLE FROM
PO BOX 300,
CAULFIELD SOUTH,
3162**

The History of the WIA Journal

COLIN MACKINNON VK2DYM

52-52 MILLS RD

GLENHAVEN 2156

(PART ONE)

MOST WIA MEMBERS would know that *Amateur Radio* magazine was first published in 1933, but how many know that this year, 1991, is actually the 72nd anniversary of the Official Journal of the Wireless Institute of Australia? Yes, our official publication has been around a long time. It has undergone several name changes and had some ups and downs in that long period, whilst all the time attempting to chronicle the rapid development of our hobby. This article traces the background behind the various publications that preceded *Amateur Radio* magazine as our official publication; with a little WIA history thrown in.

The Early Years

Wireless experimenters were active in Australia from the late 1890s, but because they were few and far between, they tended to work in isolation or in very small groups. Even at the outbreak of World War I in August 1914, there were only about 400 licensed experimenters (plus 200 illegal operators) throughout Australia, and it appears that no-one considered it practical to publish a newsletter for the benefit of these wireless experimenters.

The war caused a significant change in wireless technology and created a large number of interested ex-service personnel who had served in the Signals musterings. They saw a need to band together and to have a means of communicating through the written word.

On 7 January 1919, the Wireless Institute of NSW met for the first time since World War I. Mr Malcolm Perry, who had been the secretary since 1911, convened the meeting in the classrooms of the Marconi School of Wireless and read the minutes of the previous meeting which had been held on 7 August 1914, just before the outbreak of war. Mr Ernest Fisk 2EF, the managing director of AWA, chaired the meeting and spoke of the dramatic advances in wireless techniques during the war, the part that experimenters could play in expanding knowledge of wireless and the difficulty they now faced to retrieve their confiscated equipment and pre-war licences. Fisk proposed "the amalgamation of every amateur wireless institute in the Commonwealth, to form one united and pow-

erful body to demand from the authorities every consideration to which the importance of their work entitles them." What significant words these are. A committee was established to attempt to get the wireless equipment back, and copies of Fisk's speech were sent to wireless groups in all other states. At the first post-war general meeting of the Wireless Institute of NSW on 14 March, Fisk was elected President of the Wireless Institute of NSW.

AWA had its own publishing company, the Wireless Press, which printed a monthly magazine called *Sea, Land and Air*. It was first published on 15 March 1918 and was one of the earliest Australian publications devoted to wireless. It presented news of wireless developments in Australia and overseas, with a bias towards Marconi and AWA products. One of the early editors was S E Tatham 2ST. Given the dominant influence of Fisk and AWA, it is not surprising therefore that in March 1919 *Sea, Land and Air* became the "Official Journal of the Wireless Institute of NSW" and printed news of WI of NSW meetings.

The first post-war meeting of amateurs in Queensland was on 19 March 1919. Following the lead set by NSW, they formed the Queensland Wireless Institute, affiliated with the Wireless Institute of Australia. Some time later in 1919 they adopted *Sea, Land and Air* as their magazine, too.

Fisk and Perry travelled to Melbourne and read extracts from the resolutions of the initial NSW meeting to a gathering from there on 1 April 1919, at which time a committee was elected to form the Wireless Institute of Victoria. They adopted the constitution and rules of the WI of NSW and, naturally, *Sea, Land and Air* became the official journal of the Victorian Wireless Institute from the issue of June 1919.

On 11 September 1919 the first general meeting of the Wireless Institute of South Australia was held and, like Victoria, it adopted the rules of the WI of NSW, including *Sea, Land and Air* magazine as its journal.

Sea, Land and Air spread its influence further by becoming the official organ of the Wireless Institute of New Zealand with the December 1919 issue. The NZ Society held its first general meeting on

28 October 1919.

On 3 November 1919, a meeting chaired by Professor Ross at the Perth University noted that "the club" had been inactive since 1916, but now the Wireless Institute of NSW proposed an affiliation. There had been a pre-war Radio Club of Perth, based at the university, to which Professor Ross was referring. The meeting adopted the name The Wireless Institute of Australia, WA Section.. (However, a council meeting of the WI of NSW on 23 January 1920 decided that the name should be "Division", not "Section" and urged the other states to adopt the change. That meant they were each to become the Wireless Institute of Australia (state) Division).

Therefore, by the end of 1919, *Sea, Land and Air* covered amateur events in all mainland states and New Zealand and had become the "Official Journal of the Wireless Institute of Australia" and this was proudly noted on its editorial page. In the following years the magazine presented news and technical articles of interest to amateurs and served as a focal point for amateur contact.

Sea, Land and Air ceased by that name after the March 1923 issue, but a new magazine, *Radio in Australia and New Zealand*, took its place. *Radio in Australia and New Zealand* continued as the official journal till October 1923 but then parted company with the WIA. The Magazine prospered for a number of years and was usually referred to as simply *Radio*. It did feature amateur news, but no longer had "official" status.

In the September 1923 issue of *Australasian Electrical Times* it was reported that "The Victorian Division of the WIA has decided to publish a quarterly report of proceedings." However, this did not eventuate and, instead, a deal was made with Magazines Ltd, a subsidiary of The Standard Publishing Co, to produce a monthly magazine devoted to the interests of Australian experimenters. This was *The Radio Experimenter*, costing 1/3d for about 32 pages and first published in December 1923. It was sub-titled the Official Organ of the Wireless Institute of Australia, but it appears to have been premature in claiming that title for reasons set out below. The magazine's editor was Howard Kingsley Love 3UM, who was the president of the Victorian divi-

sion at the time, whilst Ross A Hull 3JU, a councillor of the Victorian division, was the technical editor.

In May 1924, Victoria hosted the first Australian Wireless Convention at the Melbourne Town Hall. The delegates, representing the WIA in all states, initially voted for *Radio Experimenter* to be temporarily (sic) declared the official organ of the Wireless Institute, leaving the decision open for alteration at a later date. It appears then that any previous claim to official status by the magazine was presumptuous. It was pointed out at the convention that state divisions should not be forced to accept this magazine as it might not be able to cover matters as fully as local bulletins, so the motion was altered to provide that *Radio Experimenter* would be the official organ of the Federal Council of the Institute.

In June 1924, the name of the magazine was changed to *The Radio Experimenter and Broadcaster* and from then on it incorporated details and photos of wireless retailers and their showrooms. Coverage of WIA events was patchy, probably reflecting the difficulty in obtaining regular contributions. In July '24, the magazine was taken over by the publishers, The Standard Publishing Co; a new editor was appointed and it ceased to be the WIA journal. The magazine then changed its sub-title to "The Oldest Established and Leading Wireless Publication in Victoria". It continued under this title till June 1925.

Following the break with that publication, the WIA Victorian Division decided to produce a new journal and so, in August 1924, the magazine *Experimental Radio Broadcast News* appeared carrying the sub-title: "Official Organ of the Wireless Institute of Australia". It sold for 1/- and contained 50 pages of amateur and listeners news and technical wireless articles. The editor was again H K Love, still president of the WIA Victorian Division, with Ross Hull as the Assistant Editor. It was published by Wireless Publishers of Australia, at the same address as the WIA Victorian Division. Wireless Publishers was a private company controlled by 37 shareholders, mostly committee members of the Victorian WIA, which also held shares in trust.

Obviously someone pointed out that the magazine was still not entitled to claim to represent the WIA as a whole, because the second issue of the magazine was sub-titled "Official Organ of the Wireless Institute (Federal Convention) of Australia (Victorian Division)". That must have seemed a mouthful, because the phrasing was tidied up from issue No 9 with a new sub-title of: "Official Organ of the Wireless Institute of Australia

(Federal Convention Victorian Division)".

The January '25 editorial page revealed that Love had become the managing director, whilst Hull was now the managing editor, with a Miss DM Mycroft as the secretary. The March '25 issue featured a new cover design and the name became simply *Radio Broadcast*, "Australia's foremost radio journal".

Later, from the August '25 issue, the editorial page added "with which is incorporated the *Radio Experimenter and Broadcaster*", the magazine that was detailed in previous paragraphs.

The Second Federal Convention of the WIA was held in Perth during August 1925, and B Jermyn Masters 3LM, representing Victoria, moved that *Radio Broadcast* become the official organ of the WIA. The controlling company offered to sell 4000 shares to the divisions so that they could share in the profits of the journal and to sell the magazine to members at 3/6 per year, post free. The Convention accepted the proposal (although there is no confirmation that any divisions took up shares) and the magazine, from the October issue, could now fairly claim to be the "Official Organ of the Wireless Institute of Australia". The editorial offices moved to Sydney to reflect the fact that the newly elected and first-ever Federal Council of the WIA was resident in NSW and the magazine was also printed in Sydney, although strangely it was now published on the seventh of the month, instead of the first. Ross Hull, in Melbourne, remained as the managing editor until he relinquished that position when he moved to Sydney around October '25.

Jermyn Masters in Melbourne then became editor and secretary and, with the February '26 issue, printing reverted to Melbourne. However, there appeared to be a problem as the magazine slowly went downhill. The cartridge paper cover was changed to a cheaper grade and the number of pages dropped to 34.

The magazine struggled on for another year, but the last issue in this format was Vol 3 No 5 of January 1927. An eight-page weekly pamphlet of the same name, costing 1d, but totally unconnected with the WIA and containing commercial radio programs, was issued as a new series with Vol 1 No 1 of 3 June 1927, but it lasted only four weeks.

The Turbulent Years

It is apparent that the WIA publishing effort faded out in early 1927 and individual states printed their own newsletters in the period from mid-1927 to 1929. It was during this period that dissatisfaction with the WIA led to the formation of the Amateur Radio Transmitters League

and publication of local magazines called *CQ* in NSW and *QTC* in Queensland. The journal of the WIA NSW Division during this period of unrest was *Radio Journal of Australia* from November '27 to March '28. These three publications are detailed below. A further publication was the *WIA Bulletin* from Western Australia, which ran from around 1929 through to 1932, but I have not been able to trace its history.

Disenchantment with the WIA organisation in Queensland led a group of active transmitters to meet in April 1927 to form the Queensland Radio Transmitters League. The secretary was Major Leo Feenaghty 4LJ, who became editor of the group's newsletter, *QTC*. The first issue of *QTC* was July 1927 and it was issued monthly to the QRTL members. It was hand-typed by Leo and reneered, stapled and distributed by a small band of volunteers each month. The cost of the newsletter was paid from members' subscriptions.

Radio Transmitters Leagues were promoted in the other states and, in August 1928, they amalgamated to create the Australian Radio Transmitters League (or ARTL) with headquarters in Queensland. *QTC* became the official journal for the ARTL. This ARTL was a strong group of transmitters, but the WIA was still dominant in some states and the radio authorities were reluctant to deal with more than one body representing amateurs. It made sense to reunite all amateurs under terms satisfactory to the interests of each, and discussions between the ARTL and WIA state divisions led to some degree of re-unification. For example, the Queensland Division of the ARTL was recognised as the local WIA Division, and so *QTC* was able to proclaim itself as the "Official Organ of the Wireless Institute of Australia (Queensland Division)" from the issue of May '29.

After much negotiation, the ARTL and WIA buried the hatchet and by July '29 the ARTL had merged with the WIA. Whilst I have not found evidence of official approval, the issue of *QTC* for July 1929 states that it is the "official organ of The Wireless Institute of Australia".

At the September '29 Federal Convention (No 6) of the revitalised WIA, held in Brisbane, it was suggested that *CQ* (the NSWRTL journal) should become the official organ of the WIA, with Leo Feenaghty being offered the job of editor. For reasons detailed below this did not come about and *QTC* continued as the official organ of the WIA.

(To be continued...)

AWARDS

PHILL HARDSTAFF VK3JFE - FEDERAL AWARDS MANAGER
PO Box 300 SouthCAULFIELD VIC 3162

Sorry for the lack of an awards column last month, but due to moving house during the month I missed the deadline for the last issue. My plea for help in the last column with DXCC was answered by Steve Gregory VK3OT. Steve will be known as the DXCC Assistant and will look after the DXCC records, claims for new countries worked and the periodical issuing of updates. All DXCC certificates will be issued by myself, and all DXCC-related mail should still be addressed to the Awards Manager, DXCC, c/- the above address. The reason for using the Federal Office PO Box is so that if either Steve or myself, for whatever reason, cannot carry on our appointed tasks, we don't keep getting mail coming to our home address for the next 10 years, as did some of the previous Award Managers. Steve didn't waste any time and got stuck into the updates, so, over to Steve.

DXCC — WITH DXCC ASSISTANT STEVE GREGORY VK3OT

DXCC Standings List Germany

Per DJ4AX/PA3EUI, Y2 stations will keep their call signs and will not change to DL or DM. Any new call signs issued in the former GDR will also be the same prefixes as before. To prevent mailing problems, it has been suggested that you should mark your QSL cards as East or West, purely to discriminate between towns of the same name, and clearly state the postcode on your mail.

The DXCC standings lists reflect the reunification process, and everyone has lost East Germany or GDR, but has retained West Germany as the qualifier.

Yemen

On the subject of Yemen and PDR Yemen, they are both deleted and are now on the deleted listings. If you worked 701AA or 708AA they will both count and both are acceptable for DXCC purposes and satisfy the new country of Yemen. The ARRL, except after March 1991, so send it in to us first and get credit.

Abu-Ail

Abu-Ail is supposed to be off, but is in limbo, so I have not taken any action as yet.

Deleted countries

Finally, if you worked CR8AJ, CR8AI from Portuguese Timor, why not send it in for a deleted total addition? Also, any VHF types who worked VK9 before independence may have these on their deleted totals. It seems to be that the deletions only will separate the 300-plus holders on the standings list very soon.

If there is anything you would like to know or suggest (politely), please write, and please

use the latest DX listing to assist with cross-checks, which take over an hour on a full 300-country check.

I am sorry if there are any errors in the tallies below, but I had to go back many years to obtain some totals. There have been many changes in prefixes of some countries, in particular the Yemen deletions, which some operators have had on their standings lists for over 30 years, eg VS9 Aden and Socotra. If there are errors in your score, please send me your version. If possible, follow the most recent DXCC standings list you can find.

The current country total is 322, which is not reflected in the 1989 ARRL list, so hopefully we can publish one soon. Any ideas of the format you would like? Two columns per page to make it easy to read, or three to make it compact?

Let Phil know as soon as possible. Now it's back to the dusty old records.

Congratulations to Jim VK6RU as TOP-GUN and 73. See you next update. Steve VK3OT.

DXCC Open/mixed tallies

322/373	VK6RU	308/319	VK3CI
319/363	VK4KS	306/356	VK4FJ
318/349	VK3WO	306/311	VK7BC
317/350	VK4RF	304/321	VK5WV
317/326	VK3OT	302/339	VK3XB
317/325	VK3AKK	299/323	VK4PK
314/329	VK3AMK	292/310	VK1ZL
313/359	VK6MK	295/299	WBSCCN
312/354	VK3YL	293/309	VK4BG
311/324	VK4AK	292/294	VK2AKP
310/349	VK4SD	291/305	VK4UC
310/330	VK6HD	290/314	VK2SG
308/345	VK7LZ	287/312	VK2APK
308/330	WA3HUP		

DXCC Standing List CW

311/357	VK2QL	278/295	VK6HD
304/340	VK3YL	276/303	VK2APK
302/348	VK2EO	275/317	VK6RU
300/330	VK3XB	250/291	VK3RU
298/320	VK4RF	247/248	VK3AKK
297/345	VK4FJ	236/260	VK3TL
286/326	VK3YD	223/243	VK5WO
280/303	VK3KS	211/220	VK3JI
278/313	VK7LZ	204/211	VK7BC

DXCC SSB/Phone tallies

322/373	VK6RU	303/307	VK6HE
319/360	VK4KS	300/343	VK4FJ
319/339	VK6LK	298/305	VK3RF
318/360	VK4LC	299/300	VK1ZL
318/346	VK5WO	299/300	VK3YD
317/367	VK5MS	297/303	VK7BC
317/333	VK4RF	294/308	VK1WB
317/326	VK3AKK	294/328	VK2APK
316/362	VK6MK	292/312	VK4PK
314/329	VK3AMK	290/294	VK6RU
314/323	VK3OT	287/292	VK3TL
313/350	VK5AB	287/290	VK6HE
312/324	VK6NE	285/291	VK7AE
310/314	VK3CSR	285/290	VK2DU
306/324	VK4VC	284/290	VK3DU
306/321	VK4AK	280/293	VK5OU
307/320	VK6HD	278/279	VK5EE
306/326	VK7LZ	276/298	VK3KS
306/316	VK3CI	267/271	VK3CYL
305/321	VK5MN	265/281	VK2AAK
305/310	VK3AWY	265/270	VK5RX
305/308	VK3WJ	259/261	VK3VU
304/321	VK5WV	257/268	VK3DP
304/307	VK6AJW	256/298	VK3NC
304/306	VK3YZ		

254/274	VK2SG	225/240	VK3VQ
252/277	VK3TL	220/222	VK5BO
245/256	VK3VL	212/213	VK5YF
245/250	VK3JI	202/205	VK5NAT

Note: figures above are: valid score/countries worked including deletions

Worked all VK call areas (WAVKCA)

No	Call	Name
1832	EASDW	Emilio Gracia
1833	ZL1BIN	W K Schief
1834	HE30WW	J David
1835	JATDZ	Hero Yamashita
1836	WG3CH	Earl Miamoth
1837	JABSTN	Bin Ohtsuka
1838	VK5NVW	Bill Vogel
1839	ZL2JU	Peter Byam
1840	GA4SL	Stephen Ayling
1841	K43DBN	John Rouse
1842	K41LMR	Chris Merchant
1843	K4AGVU	Bill Rowlett
1844	YB1DCA	Tomihisa Murakami
1845	YB1DCA	Iman Suleman
1846	J42DSF	Akihiko Ooki
1847	WB5MTV	Geoff Kolb
1848	DE3THM	Theodor Moll
1849	AA5ET	Derek Wills
1850	KM4RX	Walter Stewart
1851	JF1ERP	Hisamaro Kiyooka

WIA80

No	Call	Name	Endorsement
46	VK5NOD	D A Thornley	First VK5
47	N4CSF	Louis Raymond	First VK5
48	SM4CTI	Stan Taggart	First Sweden
49	L30037		First SWL
50	SMOCCE	Kjell Edvardsson	
51	VK7RY	F E Nicholls	First VK7
52	VK3WJ	John Cocking	
53	VK7FFH	Arthur Harris	All 80m SSB
54	JH7MSQ	Ken Takashima	
55	G4GVC	John Moore	All CW/First England

Worked All States VHF

179	VK3BRZ	C Gnacciarini	6 metres
180	VK3WJ	R Sishi	6 metres
181	ZL1ADP	F J Medland	6 metres

Worked All VK Call Areas VHF

39	ZL1ADP	F J Medland	6 metres
----	--------	-------------	----------

VHFCC

122	ZL1ADP	F J Medland	6 metres
-----	--------	-------------	----------

Congratulations to Edgar Nicholls VK7RY for his WIA 80 Award as Edgar is also an octogenarian, having been born in the same year as the WIA. Well done Edgar!

CQ Magazine Awards

Bill Vogel (VK5NVW) informs me that he is an authorised checkpoint for CQ Magazine awards and can supply rules, application forms and check cards, so don't send your valuable cards to the states unnecessarily, contact Bill instead. (He doesn't say so, but an IRC or SAE probably would be appreciated. Bill's address is: Bill Vogel
16 Wandilla St
Langs Nth SA 5016

Tasmanian Devil Award

Congratulations also to Lewis Smith VK2LS for working 400 VK7 stations for the Tasmanian Devil Award (total ham population of VK7 is 670) which is quite some achievement. It has taken Lewis seven years to get up to the 400 mark.

Australian Amateur Radio Postcode Club (Award)

Full details of this award appear in the October 1990 issue. Please note these changes

to the net times: every Saturday at 0030 UTC on 28.480MHz and at 0900 UTC on 3.600MHz. All else remains the same. I hope to have a sample for the column soon.

Grid Square Award

The feedback on this was a little on the quiet side, but what I did get was encouraging. Basically there will be a few changes, but the start date will definitely be 01-01-90, so start collecting grid squares now — QSL cards will not be required. More next month — in the meantime any feedback on the draft rules published in the October '90 column would be

appreciated. My new home phone number is (03) 431 2121.

Blue Mountains Radio Club Award

From D E Reed VK2UM comes details of the above award.

Rules:

(1) Five contacts with club station VK2HZ. Only one contact per band being valid on each calendar day.

(2) Alternatively log contacts with four

club members and one contact with the club station.

Also available to SWLs.

The award is free excepting the cost of postage.

To obtain the award send a log extract with unfranked postage stamps to the value of 85¢ to: The Award Manager

PO Box 54

Springwood NSW 2777

That's it for this month. All the best from Phill and Steve.

ar

CONTESTS

NEIL PENFOLD VK6NE
CONTESTS CO-ORDINATOR

RD Contest Results for 1990

Trophy Winner — VK3

Final Scores

Final Score = $\frac{\text{No Logs}}{\text{No Licences}} \times \text{Total Points} \times \text{WF}$

Weighting Factor

VK1 24/416 x 2449 x 1.06 = 149.79
VK2 55/5471 x 4825 x 7.05 = 343.56
VK3 133/6126 x 17572 x 4.59 = 2088.98
VK4 105/3123 x 10772 x 4.55 = 1646.82
VK5 71/2083 x 8679 x 1.45 = 429.13
VK6 108/1716 x 11103 x 1.47 = 1026.62
VK7 41/659 x 4099 x 2.03 = 517.56
VK8 3/205 x 169 x 9.73 = 24.01

Results in Numerical Order

1st VK3 2088.98
2nd VK4 1646.82
3rd VK6 1026.62
4th VK7 517.56
5th VK5 429.13
6th VK2 343.56
7th VK1 149.79
8th VK8 24.01

Comments from the RD Logs

I observed that the RD goes to sleep from around midnight, and that enthusiasm and participation could be greatly improved if repeat contacts on HF were to be allowed. VK4NLV.

This is our 42nd year of participation in the RD; missed in '74 as we were in Sweden but listened and heard the VK signals — interesting to note six of the 1948 contest participants were operating this year — VK6RU, 2PA, 3XK (now VK4XA) 6WT and ourselves, Ivor and Mavis, VK3XB and VK3KS.

(Add another, Ivor! As VK5BP I also was in the 1948 Contest. Bill VK3ABP)

Contest seems to be on the improve; most pleasing to hear Scout stations working; doing a good job was VK7SRS... VK4MWZ. Started late, spent Sunday morning repairing my 15m Yagi and was ill all week up to the contest; will use my computer next year if I

can find a log or contest program for my Apple IIE... VK2LEE.

Pleased with rig, could hear a lot! Used my trusty G5RV and Ten Tec 540; activity a bit quiet compared to the early '70s; still a friendly contest... VK3DX.

Wish I had read the rules as published in AR for July earlier. On HF bands, courtesy was very noticeable... VK4ADY.

These were the worst conditions ever experienced over the last 30 RD contests. DX on 3.5 and 7 was fantastic, but very few VK stations heard/worked from Humpty Doo... VK8HA.

More activity on two metres in the Melbourne area this year compared to the past couple of years; HF activity also very good... difficult to find a spot on some bands; makes it a challenge to score points. Computer logging now in place generally, standard needed for serial numbers; should there be any different serial number for HF and VHF logs or not... VK3BGS.

Propagation from VK5 was disturbed; lack of ZLs on 80m; appreciate change back to earlier version of rules... VK5QX.

A recently obtained log-keeping program caused me incredible problems this year; the ruddy thing failed to save any of the contacts made in the last four hours, so no record of the last 70 contacts... VK6ED.

Rules and "weighting" procedures that have been developed and refined over the years are working well; can anything be done to maintain the friendly aspect of the contest as I fear it is rapidly degenerating into yet another "free-for-all" contest with bad manners and operating procedures predominating, particularly on VHF. This could be corrected by leadership, but who is looking for leadership in the heat of the contest? One trick used by a person on VHF was to simply front every two hours and roar out the last three letters of his call sign without concern for anybody already

using the frequency. Very quick, very effective, also very naughty and rude, ie unfriendly. Trouble was that a number of newer amateurs got the idea that this was normal amateur operating procedure; would it be too difficult to suggest that complete call signs should be given... VK3JN.

It was six or seven years since I last went in the RD, and an opportunity to see who was still operating in the contest from my circle of old VK5 friends. Regular operators were VK5FM Pete and VK5BI Brian, now both silent keys, unfortunately. Persuaded to participate by VK3CGH, who was keen on winning the trophy for VK3. I then persuaded VK3APW Mike to have a go passing on the information that a good antenna for 80 was important; he then went on to beat me, and could be the top scorer for VK3. Good to see a lot more VK6s in this year's contest — but VK2 didn't seem very active. There was a lot of "hoo-ha" in the weeks preceding the contest because of confusion over the actual date; made myself unpopular by saying on a couple of occasions, "let's get on with the contest — whenever it is"... VK2BUI.

Interesting to see a number of operators using computers; was going to do the same but had some reservations — decided to opt for the old-fashioned method of pen and paper... VK3BGS.

Send the trophy back to VK3... VK3... From VK4OD; difficulty with a VK5 and his Morse.

And that closes off the RD for 1990; congrats to the trophy winner and the various operators who gained certificates for their efforts.

Comments from the logs extracted by VK6NE and the compilation of results done by VK6ANC, Northern Corridor Radio Group.

VK1

Points:	HF	Phone	1713
	HF	CW	0
	VHF	Phone	736
Total points scored =			2449
Logs			
Received:	HF	Phone	11
	HF	CW	0
	VHF	Phone	13
Total logs received =			24

VK1

HF Phone	Points
VK1P	720
VK1BR	193
VK1DW	165
VK1BAT	137
VK1RH	137
VK1EV	131

VHF Phone	Points
VK1OK	101
VK1ZX	85
VK1ZAR	85
VK1AGA	85
VK1OW	67
VK1BAT	64
VK1BBA	64

VK2

Points:	HF	Phone	4015
	HF	CW	698
	VHF	Phone	112
Total points scored =			4825
Logs received:	HF	Phone	37
	HF	CW	13
	VHF	Phone	5
Total logs received =			55

VK2

HF Phone	Points
VK2DVU	504
VK2DCL	396
VK2ZL	370
VK2LEE	360
VK2NW	249
VK2CKW	213
VK2DHU	142
VK2BUI	138
VK2PS	133
VK2AAE	131
VK2GJ	126
VK2ANK	117
VK2SRM	103
VK2GS	86
VK2GQX	84
VK2BYV	81
VK2FBK	76
VK2EY	68

HF CW	Points
VK2EL	119
VK2TR	91
VK2BHO	82
VK2DUI	77
VK2II	64
VK2GS	63
VK2BRA	46
VK2AZR	41

VHF Phone	Points
VK2ANK	32
VK2JQ	26
VK2BOT	17
VK2EY	17
VK2ZUJ	14
Total -	112

VK3

Points:	HF	Phone	8240
	HF	CW	473
	VHF	Phone	8859
	Receiving		390
Total points scored =			17,962
Logs received:	HF	Phone	67
	HF	CW	15
	VHF	Phone	51
	Receiving		2
Total logs received =			135

VK3

HF Phone	Points
VK3APW	590
VK3WP	544
VK3YH	419
VK3SAM	414
VK3TU	321
VK3ALZ	311
VK3BPN	311
VK3GH	308
VK3NKP	285

HF Phone	Points
VK3ADW	136
VK3DDX	136
VK3OK	100
VK3Z	40
VK3VFK	34
VK3ACR	33
VK3VW	10
Total	1713

VHF Phone	Points
VK1ZQR	55
VK1GO	39
VK1RH	36
VK1PJ	27
VK1VNG	24
VK1BNG	14
Total	736

HF Phone	Points
VK2XT	68
VK2GHZ	62
VK2ALZ	61
VK2J	60
VK2BDT	59
VK2PY	54
VK2AYF	51
VK2EGJ	50
VK2BQS	40
VK2RX	32
VK2QJ	32
VK2DOB	31
VK2JA	30
VK2GV	26
VK2EMU	25
VK2LEP	25
VK2PN	25
Total =	4015

HF CW	Points
VK2GT	36
VK2AIC	34
VK2JM	22
VK2JE	11
VK2HQ	10
Total	696
Total HF points =	4713

VK4

Points:	HF	Phone	6934
	HF	CW	805
	VHF	Phone	3033
	Receiving		27
Total points scored =			10,799
Logs received:	HF	Phone	56
	HF	CW	16
	VHF	Phone	33
	Receiving		106
Total logs received =			106

VK4

HF Phone	Points
VK4YT	679
VK4LT	461
VK4BY	352
VK4WID	348
VK4WIG	317
VK4VMP	291
VK4NEF	290
VK4NR	266
VK4TN	250
VK4PS	207
VK4BTW	205
VK4NPL	203
VK4IS	203
VK4ACC	168
VK4YG	163
VK4MWZ	162
VK4WZ	141
VK4ASF	140
VK4AVR	128

HF Phone	Points
VK3M2	44
VK3AMW	40
VK3EW	41
VK3Y	40
VK3BGC	38
VK3BMV	37
VK3AEO	36
VK3CL	36
VK3IT	35
VK3YF	34
VK3DY	33
VK3BYK	31
VK3JEM	31
VK3BY	30
VK3VH	30
VK3JED	29
VK3V	29
VK3AEB	27
VK3BGW	27
VK3AEV	25
VK3AM	18
VK3X	16
VK3AQA	17
VK3BSR	15
Total =	8240

HF CW	Points
VK3DVW	101
VK3XB	71
VK3DID	51
VK3AM	50
VK3ANP	50
VK3Y	45
VK3KS	40
VK3VT	28
VK3WI	28
VK3NZO	27

VHF Phone	Points
VK3XQ	464
VK3TAY	447
VK3ZUG	436
VK3BY	425
VK3VY	336
VK3BMV	324
VK3SAA	319
VK3JED	290
VK3APC	285
VK3CL	270
VK3DID	255
VK3V	215
VK3DUO	213
VK3CAP	207
VK3GPH	201
VK3KST	200
VK3KBX	197
VK3XMO	183
VK3JUE	155
VK3T	148
VK3CU	148
VK3NE	147
VK3TJA	111
VK3MZ	105
VK3XBA	104
VK3BH	102

VK4	
Points:	HF HC VHF Receiv
Total points scored =	
Logs received:	HF HF VHF Receiv
Total logs received =	

VK4	
HF Phone	Points
VK4YB	679
VK4LT	461
VK4BAY	352
VK4WID	348
VK4WIG	317
VK4VMP	291
VK4NEF	290
VK4WIR	266
VK4TN	250
VK4PS	207
VK4BTW	203
VK4KEL	205
VK4IS	190
VK4ACC	168
VK4YG	165
VK4MWZ	162
VK4WIZ	141
VK4ASF	130
VK4AVR	128

HF Phone	Points
VK4EHW	41
VK4ALM	40
VK4BG	40
VK4NWW	38
VK4ACR	37
VK4AGS	36
VK4DY	35
VK4KIT	22
VK4KER	19

HF CW	Points
VK4AXA	161
VK4XW	122
VK4JH	97
VK4GD	99
VK4WID	71
VK4OD	71
VK4MWZ	37
VK4XX/MM	36
VK4BRZ	32

VHF Phone	Points
VK4MD	246
VK4WZ	241
VK4ZDV	203
VK4ZML	202
VK4AL	200
VK4ZKZ	200
VK4ANN	175
VK4GUY	129
VK4VR	114
VK4AJK	113
VK4RX	108
VK4ZBV	104
VK4YPB	87
VK4AVR	78
VK4ACK	75
VK4YEA	70
VK4ASF	67
VK4YAK	60
VK4LD	55

VK5

Points:	HF	Phone	6058
	HF	CW	502
	VHF	Phone	2119
	Receiving		555
Total points scored =			9234
Logs received:	HF	Phone	42
	HF	CW	1
	VHF	Phone	21
	Receiving		1
Total logs received =			72

VK5

HF Phone	Points
VK5QX	682
VK5ADO	639
VK5J	601
VK5ARN	412
VK5ND	401
VK5GUP5	272
VK5BWH	259
VK5BJM	226
VK5CN	213
VK5WO	157
VK5ABS	150
VK5TP	140
VK5GZ	136
VK5GZ	130
VK5SHN	122
VK5LL	120
VK5BVJ	109
VK5ST	103
VK5YI	100
VK5ND	91
VK5RFB	86
VK5NGM	86

HF CW	Points
VK5AQX	140
VK5MN	124
VK5GZ	72
VK5HO	53
VK5AF	45

Receiving	Points
SWL N Young	555

HF Phone	Points
VK4ADO	17
VK4BE	17
VK4BIF	16
VK4EH	16
VK4AEV	13
VK4VBT	13
VK4NJS	11
Total =	6934

HF CW	Points
VK4CF	25
VK4SF	18
VK4XJ	16
VK4VAT	13
VK4YD	11
VK4W	10
VK4KG	10
Total =	805

VHF Phone	Points
VK4SEA	54
VK4BNL	53
VK4CHS	51
VK4TTA	45
VK4AL	41
VK4PJ	40
VK4ZDK	40
VK4JL	39
VK4DI	29
VK4YD	26
VK4DJC	24
VK4BD	19
VK4ZDV	18
Total	3633

VK5

Points:	HF	Phone	6058
	HF	CW	502
	VHF	Phone	2119
	Receiving		555
Total points scored =			9234
Logs received:	HF	Phone	42
	HF	CW	1
	VHF	Phone	21
	Receiving		1
Total logs received =			72

VK5

HF Phone	Points
VK5QX	682
VK5ADO	639
VK5J	601
VK5ARN	412
VK5ND	401
VK5GUP5	272
VK5BWH	259
VK5BJM	226
VK5CN	213
VK5WO	157
VK5ABS	150
VK5TP	140
VK5GZ	136
VK5GZ	130
VK5SHN	122
VK5LL	120
VK5BVJ	109
VK5ST	103
VK5YI	100
VK5ND	91
VK5RFB	86
VK5NGM	86

HF CW	Points
VK5AQX	140
VK5MN	124
VK5GZ	72
VK5HO	53
VK5AF	45

Receiving	Points
SWL N Young	555

HF Phone	Points
VK4ADO	17
VK4BE	17
VK4BIF	16
VK4EH	16
VK4AEV	13
VK4VBT	13
VK4NJS	11
Total =	6934

HF CW	Points
VK4CF	25
VK4SF	18
VK4XJ	16
VK4VAT	13
VK4YD	11
VK4W	10
VK4KG	10
Total =	805

VHF Phone	Points
VK4SEA	54
VK4BNL	53
VK4CHS	51
VK4TTA	45
VK4AL	41
VK4PJ	40
VK4ZDK	40
VK4JL	39
VK4DI	29
VK4YD	26
VK4DJC	24
VK4BD	19
VK4ZDV	18
Total	3633

VK5

Points:	HF	Phone	6058
	HF	CW	502
	VHF	Phone	2119
	Receiving		555
Total points scored =			9234
Logs received:	HF	Phone	42
	HF	CW	1
	VHF	Phone	21
	Receiving		1
Total logs received =			72

VK5

Points	HF Phone
682	VK5QX
639	VK5ADO
601	VK5J
412	VK5ARN
401	VK5ND
272	VK5GUP5
256	VK5BWH
229	VK5BJM
213	VK5CN
157	VK5WO
150	VK5ABS
140	VK5TP
136	VK5GZ
130	VK5GZ
122	VK5SHN
120	VK5LL
109	VK5GZ
103	VK5GZ
100	VK5GZ
91	VK5GZ
86	Total
86	

VHF Phone	Points	VHF Phone	Points
VK5KX	434	VK5RV	72
VK5KXC	383	VK5ANW	69
VK5BRC	127	VK5ZN	56
VK5MD	112	VK5ZHS	50
VK5SE	108	VK5PC	47
VK5KIA	104	VK5NEI	38
VK5ZKZ	90	VK5UE	35
VK5ZKX	85	VK5KX	26
VK5RR	84	VK5AOV	25
VK5KUH	79	VK5BLM	21
VK5NNM	74	Total =	2119

VK6

Points:	HF Phone	Phone	4859
	HF CW		261
	VHF Phone		5983
	Receiving		155
	11,258		
Total points scored =			
Logs received:	HF Phone		
	HF CW		6
	VHF Phone		52
	Receiving		109
Total logs received =			

VK6

HF Phone	Points	HF Phone	Points
VK6ANZ	510	VK6OE	36
VK6ED	318	VK6RZ	36
VK6ATZ	304	VK6SH	36
VK6AMB	291	VK6ABS	30
VK6RG	280	VK6GSP	28
VK6NEB	242	VK6BO	26
VK6HU	237	VK6H	26
VK6NAQ	235	VK6OB	24
VK6SAN	235	VK6AA	23
VK6SZ	233	VK6SO	23
VK6RLU	222	VK6EB	22
VK6YS	163	VK6NTJ	22
VK6JP	159	VK6KC	21
VK6DA	146	VK6RU	20
VK6BA	122	VK6GA	20
VK6CH	87	VK6GIU	18
VK6HQ	77	VK6IU	18
VK6FC	72	VK6AFA	17
VK6YF	71	VK6EB	16
VK6APK	60	VK6GGO	16
VK6XKH	56	VK6AN	12
VK6WVD	47	VK6JUL	12
VK6GM	42	VK6SCS	12
VK6HT	40	Total =	4659
VK6ATL	40		
VK6DM	40		

HF CW	Points	HF CW	Points
VK6AJ	121	VK6JX	22
VK6JF	41	VK6O	17
VK6AF	38	Total =	261
VK6WT	25		

Receiving L50068 155 points

VHF Phone	Points	VHF Phone	Points
VK6CX	642	VK6DA	99
VK6WN	353	VK6FG	98
VK6YBQ	309	VK6DC	94
VK6ANC	267	VK6APC	88
VK6ZLZ	247	VK6FC	87
VK6AR	225	VK6HU	83
VK6JK	216	VK6SAN	82
VK6RG	194	VK6RO	67
VK6JP	192	VK6YCK	57
VK6LZ	187	VK6SZ	48
VK6ACN	162	VK6AMB	47
VK6SH	156	VK6BO	41
VK6NEB	154	VK6WZ	34
VK6ZC	153	VK6GA	32
VK6GGA	146	VK6AFA	30
VK6ZSE	144	VK6ZBP	27
VK6RW	137	VK6ZWM	26
VK6RRG	134	VK6W	25
VK6TTY	130	VK6LUV	20
VK6JP	123	VK6XN	18
VK6ZPP	120	VK6SO	16
VK6GGO	117	VK6YL	15
VK6XNB	110	VK6Y	12
VK6GGP	108	VK6RZ	12
VK6SCS	108	VK6GU	10
VK6SAA	101	Total score =	5983
VK6YGH	100		

VK7

Points:	HF Phone	2299
	HF CW	257
	VHF Phone	1543
Total points scored =		4099
Logs received:	HF Phone	21
	HF CW	3
	VHF Phone	17
Total logs received =		41

VK7

HF Phone	Points	HF Phone	Points
VK7SRS	352	VK7NDO	70
VK7KC	334	VK7PP	60
VK7CX	280	VK7RY	60
VK7KZ	229	VK7JK	52
VK7RW	151	VK7FD	45
VK7DW	100	VK7JP	42
VK7JWR	92	VK7BFI	42
VK7GC	86	VK7RM	36
VK7NSS	74	VK7GB	28
VK7HK	72	VK7BM	27
VK7AL	70	Total points =	2299

HF CW	Points
VK7KR	137
VK7KA	100
VK7RK	20
Total points =	257

VHF Phone	Points	VHF Phone	Points
VK7ZBX	263	VK7ZMF	60
VK7DQ	220	VK7SA	56
VK7JWR	191	VK7JK	44
VK7GL	157	VK7HK	40
VK7FB	101	VK7EB	36
VK7RM	86	VK7RJ	32
VK7NDO	76	VK7Z	10
VK7ZO	73	VK7GB	10
VK7ZJG	72	Total points =	1543

VK8

HF Phone	Points
VK8AV	88
Total points =	88

HF CW	Points
VK8HA	55
VK8AV	26
Total points =	81

Points:	HF Phone	88
	HF CW	81
Total points scored =		169
Logs received:	HF Phone	2
	HF CW	1
Total logs received =		3

ZL

HF Phone	points
ZL1BVK	622
ZL2ADN	229
ZM4GB	134
ZM1M	128
ZL1BGT	78
Total points =	1191
Points:	HF Phone = 1191
Logs received:	HF Phone = 5

p29

HF Phone	Points
P29KI	180
P29NLS	75
Total =	255
Points:	HF Phone = 255
Logs received:	HF Phone = 2

1990 John Moyle Contest Rules

Phil Raynor VK1PJ
John Moyle Contest Manager

1. Aim

To encourage portable operation on the amateur bands and is intended to help Australian amateurs become familiar with portable operation, thus assisting in training them for emergency situations. The rules, therefore, have been designed to encourage all amateurs to operate in the field.

2. Contest period

From 0100 UTC 16 March 1991 to 0759 UTC 17 March 1991. It is intended that this contest shall take place on the third weekend in March each year.

3. Sections

All entries are to consist of one choice from each of the following, eg six-hour, portable, single op, phone, VHF:

Learn Electronics from VHS Video Tapes

ALL PRICES \$ AUST

VT201. 60 MINS RUNNING TIME. PART 1.D.C. **\$75.42**

Series circuits, parallel & combination circuits, Ohms law, voltage, current and resistance. Learn to use the DMM.

VT202. 75 MINS RUNNING TIME. PART 2.A.C. **\$79.54**

AC Theory, coils, transformers, capacitors, filter circuits, etc.

VT203. 54 MINS RUNNING TIME. VCR MAINTENANCE & REPAIR. **\$75.42**

For the average VCR owner. How to clean the tape path and advice about the inner workings of the VHS VCR.

VT204. 110 MINS RUNNING TIME. INTRODUCTION TO VCR REPAIR. **\$114.97**

For the technician who wants to know how the VCR processes the video information. Learn the chroma, luminance and servo systems.

VT205. 47 MINS RUNNING TIME. PART 3. SEMI-CONDUCTORS. **\$75.42**

Introduction to semi-conductors. 15 different devices. Shows how integrated circuits are designed and built.

VT206. 55 MINS RUNNING TIME. PART 4. POWER SUPPLIES. **\$75.42**

Starts with the transformer, then rectifier and filter circuits. Voltage protection. Trouble-shooting power supplies.

VT207. 54 MINS RUNNING TIME. PART 5. AMPLIFIERS. **\$75.42**

Class A, B and C amplifiers. Op amps. How amplifiers are used in today's modern circuits.

VT208. 54 MINS RUNNING TIME. PART 6. OSCILLATORS. **\$75.42**

LC Tank circuits, LC RC and crystal oscillator etc.

Send bank draft, Mastercard or Visa details to:
ELECTRONICS ASSEMBLY COMPANY
PO Box 21191, Christchurch, New Zealand
Phone (03) 79 5570
(ref street address 4/54 Rolleston Ave)
Mail order only

- (a) 24 or six-hour operation;
- (b) portable, home or receiving station;
- (c) single or multiple operator;
- (d) Phone, CW or Open mode;
- (e) HF, VHF/UHF or ALL bands.

4. Scoring

For valid contacts:

- (a) portable HF stations score two (2) points per contact;
- (b) home HF stations score two (2) points for contacts with portable stations and one (1) point for contacts with home stations;
- (c) all contacts on the 50MHz band score as for HF;
- (d) the following scores may be claimed by portable stations operating on 144MHz and higher:

- (i) 0 to 49km, score two (2) points per contact;
- (ii) 50 to 99km, score ten (10) points per contact;
- (iii) 100 to 149km, score twenty (20) points per contact;
- (iv) 150km and greater, score thirty (30) points per contact;

and, for each of these contacts in (ii), (iii) and (iv), the details of the respective station locations are to be supplied. Such details must include either latitude and longitude references for each station, or some satisfactory proof showing the distance over which the QSO was conducted. These details must be shown on the summary sheet.

5. Log submission

(a) Each log must be accompanied by a summary sheet that provides the following information: name, address, section entered, number of contacts and claimed score.

(b) The summary sheet should also note the equipment used, station location and for multiple operator stations, a list of all call signs that operated the station, together with their signatures.

(c) The summary sheet shall include the following declaration signed by the operator or, in the case of a multiple operator station, one of the licensed amateurs who operated the station: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest."

(d) Logs should be forwarded to The John Moyle Contest Manager, PO Box 315, Fyshwick ACT 2609. Logs are to be postmarked no later than 30 April 1991.

6. Certificates and trophy

(a) At the discretion of the contest manager, certificates will be awarded to the winner of each portable section. The six-hour certificate cannot be won by a 24-hour station.

(b) The President's Cup will be awarded to the portable station with the highest CW score. The recipient shall be presented with an individually inscribed wall plaque as permanent recognition.

7. Disqualification

General WIA contest disqualification cri-

teria as published will apply to this contest. Untidy, illegible and messy logs will automatically be disqualified.

8. Definitions

(a) A portable station is one which operates from a power source which is independent of any permanent installation, ie batteries, portable generators, solar and wind power.

(b) The size of any portable station shall be restricted to approximately that of an 800mm diameter circle.

(c) A single operator station is one where all operating of the transmitting apparatus is done by one operator only.

(d) A single operator may only use a call sign of which he/she is the official holder. A single operator may not use any call sign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.

(e) A multiple operator station is a station operated by more than one operator.

(f) Only one call sign may be used from a multiple operator station.

(g) Multiple operator stations may use only one transmitter on a given band at any one time, regardless of the mode in use.

(h) Multiple operator stations are to use a separate log for each band.

(i) A club, group or organisation, by default, is considered a multiple operator entry.

(j) No apparatus may be erected on the site earlier than 24 hours before the contest period commences.

(k) Assistance may be given to help the single operator prior to and during the contest. The practice of clubs or groups providing massive logistic support for a single operator is totally against the spirit of the contest. Offenders will be disqualified and possibly banned from participation in the contest for a period of up to three years.

(l) SSB, FM and AM all count as PHONE.

(m) CW and RTTY are both regarded as CW.

(n) It is not expected that any other modes would be used in this contest, but if they are, they shall be regarded as CW.

(o) All amateur bands may be used with the exception of the 10, 18 and 24MHz bands.

(p) Cross-band contacts are not permitted, except by satellite repeater systems.

(q) Cross-mode contacts are not permitted.

(r) Contacts made via terrestrial repeater systems are not permitted. However, repeaters may be used to arrange a contact on a simplex frequency.

(s) Portable stations are permitted to make repeat contacts and claim the appropriate points, provided that at least three (3) hours have elapsed since the previous contact with that station on the same band and mode.

(t) Home stations may not claim any points for repeat contacts.

(u) Stations are to exchange ciphers consisting of the RS/RST and a number com-

mencing at 001 and incrementing by one (1) after each contact.

(v) Portable stations shall add the letter "P" to their own cipher, eg 59001P for the first contact.

(w) Multiple operator stations are to commence each band with 001.

(x) Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for home stations, unless the receiving station is portable.

(y) The practice of selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest and shall result in immediate disqualification. The period of operation commences with the first contact on any band or mode and finishes either six or 24 hours later. **ar**

Errata

In the Jack Files

Contest Results reported in the October issue, we failed to mention that VK2LEE scored 580 points in section 4a. Apologies to Lee.

Ross Hull Contest

contributed by VK3ZJC

By the time you read this, the Ross Hull Contest will be well under way, hopefully with plenty of activity and plenty of DX. A reminder that the contest ends on 19 January and that logs must be received by 18 February. Early logs will be appreciated.

Several enquiries have been received asking whether locator numbers are a necessary part of the contest exchange. The answer is no — locators are no longer used as the basis for scoring and need not be exchanged. However, six-digit locators are an easy way of getting fairly accurate distance estimates, and they are suggested for this purpose. Otherwise "map and ruler" estimates are quite acceptable.

Distance Estimating Program

Last month we provided a simple program to find your six-digit Maidenhead locator from your latitude and longitude. There was an omission in the description of this program — in the third paragraph, the second sentence should read:

"The possible north-south error is about ± 55 km, and the east-west error, for example at Melbourne's latitude, is ± 88 km."

This month's program takes the locators of two stations and estimates the distance between them. This program is more than adequate for the Ross Hull Contest, but it does not have a high level of accuracy and is NOT RECOMMENDED for serious calculations.

Lines 215 and 220 input the locators of two stations. Note that it is only possible to get a useful distance from six-digit locators. However, for rough estimates (very rough!) you

can enter a four-digit locator, and line 265 will convert it to six digits by adding an "MM" to the string (this represents the centre of the locator square). Line 270 allows the use of upper or lower case letters when entering the locators of the two stations.

Lines 280 and 285 convert the locator string into degrees north of 90 degrees south, and east of 180 degrees west (the two starting points for the locator numbering). Line 290 converts these degrees to radians, and lines 225-235 then estimate the great circle distance to the closest kilometre. Note that this apparent accuracy is deceptive, because six-digit locators give only an approximation within a few kilometres.

The program is in GW Basic but can be used on an Apple by changing the "CLS" command to "HOME" and rewriting lines 260 and 255 as follows:

```
250 GET K$: IF K$ = CHR$(13) THEN 210
255 END
```

As with last month's program, there is no error trapping so it is possible to get ridiculous answers if you type in impossible locators. When typing it in, be careful with the punctuation signs, brackets and so on.

VHF-UHF Field Day

This contest will operate again over the Australia Day weekend, using similar rules to last year's. The Maidenhead locator system has been retained, although there have been minor changes in other rules.

There has been a great increase of interest in the higher bands during the past year and it is hoped that as many operators as possible will be able to take the opportunity to participate.

Duration: 0200 UTC Saturday 26 January to 0200 UTC Sunday 27 January

Sections: A: portable station — single operator

B: portable station — multiple operator

C: home station

General: All modes and bands above 30MHz may be used. Repeater and crossband contacts not allowed. Stations must remain within the one locator square for the duration of the contest. You may work stations within your own locator square.

Exchange: A serial number beginning at 001, plus Maidenhead four-digit locator. RS or RST reports may be exchanged but are not required in the log.

Repeat contacts: Stations may be worked again on each band after four hours.

Scoring: One point per contact, two points if both stations are portable. Multiply the local score on each band by the number of locator squares worked on that band, then by the appropriate band multiplier:

50MHz: x 1. 144MHz: x 2. 432MHz: x 4. Higher bands: x 6.

Logs: For each contact, UTC time, band, station worked, serial numbers and locator numbers exchanged, points claimed. The front sheet should contain the name, address and call sign of the operator, section entered, and a scoring table as follows:

Band	Points	Squares	Total (points x squares)
6m	XXXX	XXXX	XXXX
2m	XXXX	XXXX	XXXX
etc			
Overall total		XXXX	

Awards: The highest all-band scorer in Section A; the highest scorer on each band in Section A; the highest scorers in Sections B and C.

Entries: Post logs to the Manager, VHF-UHF Field Day, PO Box 300, Caulfield South Vic 3162. Logs must be received by Monday, 25 February 1991. **ar**

PROGRAM: LOCATOR TO DISTANCE ESTIMATOR

```
200 REM ----- Simple Locator to Distance Converter -----
205 DIM C(6): PI = 3.14159265: DEF FN A(X) = ATN (ABS (SQR (1 - X^2) / X))
210 CLS: PRINT "Simple Locator to Distance Converter": PRINT
215 INPUT "Your home locator "; L$: GOSUB 260: E1=E: N1=N
220 INPUT "Distast station locator "; L$: GOSUB 260: E2=E: N2=N
225 AN = COS(E1 - E2) * COS(N1) * COS(N2) + SIN(N1) * SIN(N2)
230 AC = FN A (AN): IF AN < 0 THEN AC = PI - AC
235 D = INT (AC * 6367)
240 PRINT "Approximate distance (km): "; D: PRINT
245 PRINT "Options: <RETURN> to do another <ANY OTHER KEY> to quit"
250 K$ = INKEY$: IF K$ = "" THEN 250
255 IF K$ = CHR$(13) THEN 220 ELSE END
260 REM ----- 6 Digit Locator to Lat & Long S/R -----
265 L$ = L$ + "MM": FOR X = 1 TO 6
270 C(X) = ASC (MID$(L$,X,1)): IF C(X) > 96 AND C(X) < 123 THEN C(X) = C(X) - 32
275 NEXT X
280 E = -180 + 20 * (C(1) - 65) + 2 * (C(3) - 48) + (C(5) - 65) / 12
285 N = -90 + 10 * (C(2) - 65) + 2 * (C(4) - 48) + (C(6) - 65) / 24
290 E = E * PI / 180: N = N * PI / 180: RETURN
```

HOW'S DX

STEPHEN FALL VK2FS
PO Box 93 DURAL NSW 2158

"—Ring out the old, ring in the new,
Ring out the false, ring in the True—"

This is how Tennyson, the well known 19th century English poet described the coming of the new year.

In ancient Rome, the first day of the year honoured the god Janus. The month of January derives its name from him. Janus was the god of gates and doors, and of the beginnings and endings. He had two faces; he looked back into the past and forward into the future.

Modern men and women follow this path and by looking back into last year's mistakes, omissions, failures, shortcomings, lack of success and non-performance of our duties, we make a "New Year's Resolution" to do things differently and better in the future.

We radio amateurs should make also our "resolutions". I am listing a few here, which I

think we all should follow:

- 1.) We will try to be friendly on the bands, assist and co-operate with others. Before we use a particular frequency, we will listen, and we will make sure - by asking - whether it is occupied or not?
- 2.) We will try to be considerate to other amateurs on the band, and we will not disturb the enjoyment of others. We will not QRM, either accidentally or deliberately any amateur activity on the band, whether that of an individual or a particular group.
- 3.) We will try to be well informed in all radio amateur matters. We will not interrupt a QSO or a pile-up, by asking "what country is that?", but we will study beforehand the table of international prefixes.
- 4.) We will try to revise our own operating

procedures, with the view of bettering same. We will collect our QSL cards from the distribution centres and will reply to them. We will learn how to use our two VFO's and frequency memories on our transmitter, to prevent us from blundering in a rare DX pile-up.

- 5.) We will try to be a better, more loyal, more understanding, more knowledgeable, more tolerant and less prejudiced radio amateur, and by becoming one, we will be a better and much happier person to the benefit of ourselves and to all those around us.

Hungarian South Pacific Wanderings

Ele HA9RE and Miki HA8XX have been in the Pacific area since 22 December. First operation was from Chatham Island (ZL 7) with the call signs: ZLOAAD and ZLOADN. Next step is the Niue Island group where the call signs: ZK2XA and ZK2XB will be used. February will see them on the South Cook

Our Most Rugged HF Mobile Transceiver!

FT-757GX II

ALL MODE COMPUTER AIDED TRANSCEIVER

Ready for action! Whether in a demanding H.F. mobile situation, or at home in the shack, the FT-757GX II won't let you down. Based on its popular predecessor, the new MK2 features the heavy duty die-cast heatsink and rugged metal chassis of the earlier 757GX, but has been substantially upgraded to offer a number of new features. These include...

- All mode operation — SSB, CW, AM, FM (160m-10m) • 100 watt output on SSB, CW, FM (25W AM) at 100% duty cycle • High performance general coverage receiver — 150kHz to 30MHz • Dual VFO's with single button VFO/memory swap functions • Memories store freq and mode, plus allow band scanning between adjacent memories • Inbuilt 600Hz CW filter, IF shift and IF notch filters, variable noise blander, Speech Processor, iambic CW keyer, and SWR meter.

Cat D-3492

2 Year Warranty

Only \$1795



FT-736R VHF/UHF BASE-STATION TRANSCEIVER

The FT-736R is Yaesu's BEST VHF/UHF transceiver! Designed for the serious VHF/UHF operator, this high-performance transceiver provides 25W output (SSB, CW, FM) on the 2 metre and 70cm (430-450MHz) bands, and can be easily expanded to also cover the 6 metre and 23cm (1240-1300MHz) bands as required.

Features include keyboard frequency entry, 115 memories, 2 independent VFO's per band, separate FM Channel knob with selectable channel steps, 2 full duplex VFO's for Satellite operation, IF shift and Notch filters, noise blander, all-mode VOX, SSB speech processor, GaAs Fet front-ends (430, 1200MHz), high stability TCXO reference oscillator, and an inbuilt AC power supply. Includes MH-1 hand-held microphone.

Cat D-2920

\$2495

Hurry, beat the price rise!



**6m module (D-2921) - \$475
23cm module (D-2922) - \$699**

ONE PLACE TO SHOP FOR ALL YOUR ACCESSORIES!

15 Watt Finned Dummy Load

A high quality coax terminator with superb SWR characteristics. Heat resisting ceramic resistor assures <1.2:1 SWR DC - 500MHz, with gold flashed PL-259co for minimum contact resistance. 50 ohms impedance, rated at 15 watts continuous or 100 watts up to 30 seconds.

Cat D-7025

\$39⁹⁵



Rak BL-50A Balun

Designed for use as a centre support for dipoles or yagi antenna. Input is 52 ohms unbalanced with output 50 ohms balanced. The RF input power is 1kW with an insertion loss of less than 1dB. Frequency range covers the entire HF band (3 to 30 MHz).

Cat D-5310



\$59⁹⁵



NSW • Albany 21 8390 • Bankstown Square 707 4886 • Blacktown 671 7722 • Brookvale 905 0441 • Bc di 387 1444 • Campbelltown 27 2199 • Chatswood Chase 411 1955 • Chulora 642 8922 • Gore Hill 439 5 11 • Gosford 25 0235 • Harberty 477 6603 • Hurstville 580 8622 • Kotara 56 2092 • Liverpool 600 9888 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 878 3855 • Parramatta 689 2188 • Penrith 32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tameworth 66 1711 • Wollongong 28 3800 • ACT • Belconnen (06) 253 1785 • Fyshwick 80 4944 • VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 690 0699 • Coburg 383 4455 • Dandenong 794 9377 • East Brighton 592 2366 • Essendon 379 7444 • Footscray 689 2059 • Frankston 763 9144 • Geelong 232 711 • Melbourne City 599 Elizabeth St 326 6088 and 246 Bourke St 639 0396 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 • QLD • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 311 515 • Chermesse 359 6255 • Redbank 288 5599 • Rockhampton 27 9644 • Southport 32 9033 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 223 4122 • Beverley 347 1900 • Elizabeth 255 6099 • Grinfield 260 6088 • St. Marys 277 8977 • WA • Cannington 451 8666 • Fremantle 335 9733 • Perth City 481 3261 • Midland 250 1460 • Northbridge 328 6944 • TAS • Hobart 31 0800 • NT • Stuart Park 81 1977

ORDER BY PHONE OUTSIDE SYDNEY (001) 226610 Free Call Sydney Area 888 2105

2 Metre Linear Amp Kit

Increase your operating range with this high power amp kit. Nominally rated for 10 watts in with 100 watts output, it still provides around 40 watts output with only 2.5 watts in (ideal for use with the FT-290Rll). The kit is supplied complete with all hardware, components, etc. and uses high quality coax relays for maximum performance. Requires 13.8V DC at 15 amps.

Cat K-6313

VERY LIMITED STOCKS!

\$179



Yaesu FT-411 2m Hand-Held THE POWER OF A BASE STATION IN THE PALM OF YOUR HAND!



The FT-411 is a top-of-the-line ultra compact 2 metre handheld offering an incredible array of features without the size and weight of previous sets. Expanding on the microprocessor controlled features of previous models, the front panel multi-function back-lit keypad allows easy frequency entry, selection of the 49 tunable memories (which store repeater shifts, or separate Tx/Rx frequencies), setting of the programmable-interval 'power-saver' system, as well as a host of other convenience features. CPU control also offers 2 VFO's, rotary dial tuning with 5 selectable tuning steps, a multi-function back-lit 6 digit LCD screen with bargraph Signal/P.O. meter, and a range of scanning options. Even VOX (voice-activated transmit) circuitry is provided, allowing hands-free operation with the optional YH-2 headset.

Yaesu have also recognised that a hand-held radio must be ruggedly constructed, and yet be small enough and light enough to carry around all day. Through the extensive use of surface-mounted components, a heavy duty die-cast rear panel, rubber gasket seals around all external controls and connectors, and a carry case supplied as standard, the FT-411 will provide reliable operation even in dusty or humid environments while measuring only 55 (W) x 155 (H) x 32mm (D), and weighting less than 550 grams (including a high capacity 1000mAh FNB-14 NiCd battery giving 2.5W output). A range of inexpensive optional accessories are also available to provide flexibility for users differing requirements. See AR review Vol 12 Issue 3, and AR review January 1990 issue.

Complete Package:

FT-411, 7.2V 1000mA/H NiCad (FNB-14), Carry Case, Antenna, Belt Clip, and Approved AC Charger.

D-3350

Hurry, very limited stocks!

Optional Accessories

FNB-11
MH-12A2B
YH-2
PA-6

12V 600mAh NiCad Battery (for 5W RF out)
Speaker/Microphone
Mic/Earphone Headset
12V DC Adaptor/Charger

D-3496 **\$99.00**
D-2115 **\$59.95**
D-2200 **\$49.95**
D-3498 **\$39.95**

\$399

YAESU STOCKS NOT HELD AT ALL STORES. PLEASE CONTACT YOUR LOCAL STORE FOR STOCK AVAILABILITY, OR ORDER BY PHONE...



NSW • Albany 21 8399 • Bathurst 308 707 4885 • Blacktown 671 7722 • Broken Hill 905 0441
• Broadmeadow 27 2199 • Campbelltown 27 2199 • Chesham 642 8602 • Coffs Harbour 439 5311 • Gosford 25 0235 • Harbourside 477 6633 • Hurstville 580 8622 • Katoomba 58 2092 • Liverpool 600 9888 • Marandah 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Sydney 878 3855
• Parramatta 689 2188 • Penrith 32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Wollongong 28 3800 • **ACT** • Belconnen (06) 253 1785 • Fyshwick 80 4944 • **VIC** • Ballarat 311 5433 • Bendigo 43 0388 • Box Hill 890 0699 • Coburg 383 4455 • Dandenong 794 9377 • East Brighton 582 2366 • Epping 379 7494 • Footscray 689 2055 • Frankston 783 9144 • Geelong 222 7111
• Melbourne City 399 • Elizabeth 311 326 6088 • 246 • Rouse St 639 0396 • Richmond 423 5614
• Ringwood 879 5338 • Springvale 547 0522 • **QLD** • Brisbane City 229 9377 • Brisbane 361 6233
• Cairns 311 5115 • Chelmsford 359 6255 • Hebban 288 5599 • Rockhampton 27 9644 • Southport 32 9033 • Toowoomba 38 4300 • Toowoomba 72 7722 • Underwood 341 0844 • **SA** • Adelaide City 223 4122 • Beverley 347 1900 • Elizabeth 255 6099 • Enfield 260 5688 • St. Marys 277 8977
• **WA** • Carrington 451 8566 • Fremantle 335 9733 • Perth City 481 3261 • Midland 250 1460
• Northbridge 328 6844 • **TAS** • Hobart 311 0800 • **NT** • Stuart Park 81 1917

ORDER BY PHONE OUTSIDE SYDNEY (088) 226610 FREE CALL — Sydney Area 888 2105

YAESU

Computer Aided All Mode Transceiver FT-747GX Budget HF Transceiver



Better performance and value for your dollar is the hallmark of the FT-747GX from Yaesu. Incredibly lightweight and measuring just 238 x 93 x 238mm it takes up next to no space in the shack and is well worthy of consideration as a mobile rig.

The FT-747GX SSB/CW/AM (& optional FM) transceiver provides 100 watts PEP output on all 1.8 - 30MHz amateur bands and general coverage reception continuously from 100kHz to 30MHz.

Superb Features

You get the ultimate in convenience including front mounted speaker, a clear unobstructed display and control layout that leaves selection, via the 15 pushbutton controls and two dual pots, as easy and uncomplicated as it can be.

With operator selectable tuning steps for each mode, dual VFO's for split frequency operation and 20 memory channels - eighteen of which can store split Tx/Rx frequencies. Wideband 6kHz AM, and narrow 500Hz CW IF crystal filters are fitted as a standard feature, as well as a clarifier, switchable 20dB receiver attenuator and noise blanker to optimize reception under varying conditions.

It's also fitted with the CAT (Computer Aided Transceiver) system for user programming for even more advanced control by an external computer (requires optional interface).

What's more, you'll be supplied with an MH-1 hand held microphone when you purchase your new Yaesu FT-747GX from Dick Smith Electronics, your authorised Yaesu Distributor.

Cat D-2930

With 2 Year Warranty.

\$1299

*Yes, we stock a range of antennas and mounting bases for mobile use.
Ask at your nearest store!*

PHONE AND MAILORDER SERVICE

ORDER BY PHONE OUTSIDE SYDNEY - 008 22 6610 (LOCAL CALL FEE)

SYDNEY ORDERS AND ENQUIRIES - 888 2105

FAX (02) 805 1986 OR Write To DS XPRESS, PO Box 321 North Ryde NSW 2113

All major credit cards accepted. O/Nite courier available

24 HOUR DESPATCH OF ALL ORDERS



B1091/PB

Islands.

HA9RE wanted to include the Kermadec (ZL8) island group in his plans. He has permission to land there, but because of the present world oil crisis, he had to abandon this leg of his expedition. The charter costs of a boat from New Zealand to Kermadec and back have escalated to US\$30,000, and they don't have that sort of money at their disposal. The expedition has been financed by the two amateurs themselves by borrowing money from every possible source. The organizing of their trip took one and a half years. I will pass further information to you as it comes to hand.

Incidentally, if you are wondering why you did not hear Tai ZL7TZ recently (who was a resident amateur on Chatham Island) the answer is simple. Tai's contract as a resident postmaster has expired. He returned to New Zealand, and the new Postmaster is not an amateur.

Western Samoa – 5W1

Pieter 5W1KT advises me that his contract has expired, and he intends to return to his home state Western Australia in January. Piet was quite a good DXer. He was to be found on 20, 15, 10, and 6 metres, and lately he was active on RTTY, AMTOR and Packet. Piet writes "I have been lucky to come here and work DX and try some new bands and modes. I will certainly miss being a rare DX. It is one of the nicest experiences, although it can also wear one down. The QSLing has certainly been a massive task". Thank you Piet for your willingness to give a new country to the HF user of the band. We wish you good luck in the future.

Lesotho – 7P8

On the occasion of receiving my QSL card, (his first one from VK) Rick 7P8EB sent me the photograph shown on this page, and a few lines about himself and family. Rick and his wife Mary are both from the USA. They were in Africa until 1979, and in Lesotho since 1984 with a missionary group. Rick is an electrical engineer by profession. Both he and his wife gained their Lesotho licences in mid 1989; Rick as 7P8EB and Mary as 7P8DF. There are only six active amateurs in Lesotho, and Rick enjoys being a rare DX. They plan to stay in Lesotho for at least five more years. Both are active mostly on 20-15-10 m bands. Try to work them.

San Felix – CE0/XQ0X

Early in November the unconfirmed news indicated that Ambrosia Island, which is a member of the San Felix Island group, will be activated by John CE0ZAM. Those in the know said that he activity will be for three to five months. Scientific research is being undertaken into the lobster population in the waters around the island. John's English is



Rick 7P8EB and his XYL Mary 7P8DF in their shack in Lesotho

limited, and his DX experience is somewhat restricted. Therefore expect to find him on the various DX nets: 14160 -14222-14236- and 14226. He was supposed to start on 15 November, but it was announced at the end of that month that the expedition has been slightly delayed. John's call sign is XQ0X. By the time you read this he should be on the bands. QSL to: CE3ESS: Mickey Gelerstein, PO Box 9834, Santiago, Chile.

Mt Athos – SV/A

Athos means "mountain" in Greek and it is the "Holy Mountain" of the Orthodox Church. The mountain is situated near Thessalonika in Greece. This territory of about 75 sq kms of mountain area rising to little over 2000 metres above the Aegean Sea, is the site of a religious community of monks founded in the latter part of the ninth century. This community was under the sovereignty of the Byzantine Emperors, but later it was ruled by the Turks. In 1912 the area was occupied by the Greeks, and in 1926 the Greek Government recognized the community as a theocratic republic. Theocracy is a system of government by priests claiming a divine commission where God is recognized as a supreme civil ruler. The council of Government has four members and an assembly of 20 members. The community has its own police, but no women or female animals are allowed on its territory.

Radio amateurs seldom get permission to operate from Mt Athos, which is a separate recognized DX country. At the end of November, there was great activity on various bands and nets. Nikos SV2RE/A and George SV2UA/A were very active, and quite a number of VK/ZLs have worked them as a new country. QSL to home address: SV2RE/A: Nikolaos Georgiadis, Egnatia 108, GR-54622 Thessalonika Greece. SV2UA/A: George Tsailios, Erythrou Stavrov 7A, Votsi, GR-55134, Thessalonika Greece.

Malpelo Island – HK0TU

This was a very successful and well disciplined operation from this tiny rock in the Pacific Ocean (3° 59' N and 81° 34' W) about 448 kms west of the coast of Colombia. Malpelo is an uninhabited rock, rising to some 400 metres above sea level. It is about 1600 metres long and about 800 metres wide. This inhospitable rock was invaded for five days by 20 Colombian radio operators in the first week of November. According to Marco HK4CYR one of the antennas fell into the sea, and it took the expedition 12 hours to fix up a new antenna at 375 metres above sea level. HK0TU had a very good signal into VKZL most of the time at S 7/8 in Sydney, and quite a number of VKs worked this rare DX Country. QSL to: HK3DDD: Edilberto Rojas M, Box 25827 Bogota 1, Colombia, South America.

Interesting QSOs and QSL Information

Note: call sign-name-frequency-mode-UTC-Month of QSO. ADAR=QSL info in previous issues of "AR".

***UM2Q/UA90-21027-CW-0610-QSL via UA90J via Bureau.

***7X3DA-Madid-21025-CW-9640-QSL via Bureau.

***2X8CW-14017-CW-0700. QSL via: PT7AA; Pergentino Ide Andrade, Rua Osorio De Paiva 25, 69000 Fortaleza, CE, Brazil.

***V63BD-21026-CW-0600-QSL via VE3JDO John R Brummell.

11 Beechfern Dr, Box 880, Stittsville, Ontario, KOA 3G0, Canada.

***T33X—Baldur-28025-2330-QSL via DJ6SI Baldur Drobניה, Zedernweg 6, D-5010, Bergheim, Germany (SASE Direct only).

***V73BX-Baldur-21024-CW-0400 - QSL via DJ6SI (as above).

CE0LJ1-Ricardo-14198-SSB-1012-Nov-QSL c/o Hospital, Easter Island, Chile.

***CEDDFL —Marco-14222-SSB-0623-Nov-QSL to Box 7, Easter Island.

***T20AA-Ian-21283-SSB-0410-Nov-QSL to N4JFL Thomas G Schrenkengost, 8 W Pine Tree Ave, Lake North, FL 33463, USA.

***YJ8CW-Colin-21303-SSB-0425-Nov-QSL to Box 342, Port Vila, Vanuatu.

***CE0ZZ-Juan-14195-SSB-1053-Nov-QSL to CE3BFZ, Pedro A Barosso, Box 13312 Santiago Chile.

***VP8CEG—Tony-21300-SSB-0656-Nov-QSL to G1NAN AJ Gateery, 2 Langmere Road, Watton, Thetford, Norfolk, IP25 6LG, UK.

***7J6AAK-Zbig(VK2EKY)-14222-SSB-0606-Nov-QSL to WA3HUP ADAR.

***9M2ZA-Zainal-14040-CW-1031-Nov-QSL via the Bureau.

***8J9UFO-Ryo-14030-CW-1031-Nov-QSL via JARL Bureau.

***9M600 Bob-14025-CW-2114-Nov-QSL to N200 Bob 45 Tuckerton, NJ 08087, USA.

***C6ACN-Phillip-14226-SSB-1214-Nov-QSL to PO Box GT 2318, Nassau, Bahamas.

***SU1FN-Fathy-14220-SSB-0628-Nov-QSL to Fathy Anwar Abdul Fattah, 17 Shahied Mahmoud Fouad St Heliopolis Cairo Egypt.

***V63AO-Nishi-(formerly KC6IN)-28520-SSB-0436-Nov-QSL to Box 296, Ponape, East Carolines, Micronesia.

RTTY News

Here is a selection of DX as supplied by Syd VK2SG:

***ZD7JAM-28087-1322Z-JOTA activity-QSL to Box 54 St Helena Island.

***3DA0B-21082-1811Z-QSL to Box 57, Big Bend, Swaziland, Africa.

***VP8BFH-14080-0340Z-QSL to Box 60, Port Stanley, Falkland Islands.

***CN8YP-28092-1492Z-QSL to FDXF or F6FPY.

***CN2JF-14086-0127Z-QSL to WA0RJY

***J73WA-21085-0045Z-QSL to Wayne Abraham, 1430 Rodney St, Portsmouth, Commonwealth of Dominica, West Indies.

***CN15AMV-28085-1130Z-QSL to Box 299, Rabat-Morocco. *** HC8VB-14084-0427Z-QSL to Diego, San Cristobal, Galapagos Is via Ecuador.

***0X3EW-14086-0121Z-Box 1308, APO NY, 09023W, USA. ***V51P-21084-2141Z-Box 9080, Windhoek, Namibia, Africa.

***VP8BFA-21088-0215Z. ***P29BT-21087-2230Z-QSL to N5FTR. ***PJ2/OH2BGD-14089-0109Z-QSL to OH2BGD.

From Here and There and Everywhere

***Albert, VK6UA informs me, that the list of net controllers of "SEANET" (See "AR" Nov 90) is not correct. There are now six active net controllers on 14320+/-QRM at 1200 UTC each day. VK6UA Albert -VK6XC Ben-HS0E

Sombat-YB3BDL Linda (YL) - 9M6KT Mike - and HS0B Fred.

***Received the V51NAM QSL card. This was the Namibia Independence Station, which was on the air from 21 to 25 March 1990. Very nicely produced colour card, with a brief history of the country and an explanation of the symbolism of the new Namibian flag, which is also shown. The card was posted by the Ministry of Wildlife, Conservation and Tourism, PO Box 13348 Windhoek 9000 Namibia.

***The envelope sent to EL7X with QSL card and return postage on 9 June 1990 was returned unopened and untouched in November, with the notation in French, that the delivery of the letter is not possible at the moment. Nice way of saying that Liberia is involved in a civil war.

***Worked ZM6CA special event station in May 1990. The other day, a nice coloured award certificate arrived, bearing the serial no 3, to confirm that I contacted the station at the Waikato Lifestyle Conference.

***Victor ON6BV advises that he is QSL Manager for the following stations: 3X1SG, 3X1AU and 3X1AW. His address: Victor Ravvts, Free St 4, B1590, Bever BT, Belgium.

***If you do not get direct replies to your cards sent to:TA3B, TA3C, TA3D, and TA3F, try to send the cards via DL5YCC. Some of the mail is not arriving at the Turkish QTHs.

***Jack T30UH said that he is leaving at the end of November to go to Bahrain: his call there will be A92JH. Jack said that, due to very heavy work commitments, he does not think he will be much on air. He will return at the end of January.

***KC4MJ has advised that he is not the QSL manager for John PA3CXC/ST0.

***There were two DXpeditions to Banaba T33. Shortly before the T33R and T33T team had arrived, Baldur, DJ6SI (T33X), Karl, DK2WV (T33WV), and Henry DJ6JC (T33C) made a quick unannounced operation between 4 and 8 November 1990.

***The DXCC decided to delete East Germany (Y2-Y9) from the DXCC countries list as from 3 October 1990. Contacts with Y2-Y9 stations after that date count as Federal Republic of Germany. From 22 May 1990, both the two former Yemeni states (70-4W) were deleted and replaced by the Republic of Yemen designation with the call sign: 70. QSL cards to claim the new country must be submitted only after 1 March 1991.

***As from 1 October 1990, YJ8RN has a stateside QSL manager N9DRU.

***According to ZS6PBY Mozambique, C9 might be on the "air" as from 1 January 1991. There are nine operators in the country, and all applied for licences.

***Dieter TL8WD left the Central African Republic on 11 December.

***Jim VK9NS is quietly preparing for a future possible activity from Bangladesh.

***The Jarvis Island AH3C/KH5 QSL cards have arrived in VK/LZ. According to the well-

produced colour card, they made 55000 contacts. A group photo of the expeditioners and the photo of the boat Makamalani is on one side, all the other information is on the other side.

***The well known DXer, Marti Lane OH2BH has written a book about his own DXpeditions. Almost 25 years of DX activity has produced a book of approximately 300 pages, and can be bought from KTE Publications, 2301 Canehill Ave, Long Beach, CA 90815 USA for \$US29.95. This price includes handling and postage of \$US 7.00.

***The Siam International DX Club was formed by a group of DX and Contest minded amateurs in Thailand. Thailand has now some 13000 licensed amateurs, mostly no-code two metre FM operators. About 30 amateurs who passed the special examinations are now allowed to have HF privileges.

***Life is getting more orderly in Lebanon. Within a week the following stations were heard: OD5AS, OD5IG(QSL to:OE5BJN) and OD5SK.

***Just received a letter from Todor LZ1HA. Todor apparently knows about our magazine "Amateur Radio" and the existence of this DX Column. Todor is trying to establish a "Bulgarian Speaking Net" on behalf of number of amateurs in Bulgaria. They are now looking for ex-Bulgarian amateurs in Australia and anywhere in the world, who still speak some Bulgarian. If you are one of those, or you know of a Bulgarian speaking VK amateur, please get in touch with LZ1HA: Todor Dikov, PO Box 603, 1000-Sofia, Bulgaria.

Interesting QSLs Received

Note: W=weeks, M=months, YRS=years, FM=from, MGR=manager, OP=operator.

Direct QSLs received: 7P8EB (3W FM OP) ***VP8BKK 93W FM MGR) ***XT2BW (4W FM MGR) ***CP5LE(W FM OP) ***5R8JD (4W FM MGR), ***S01A (7MO FM MGR), ***A61AD (5WFM MGR), ***3X1SG (6W FM MGR), ***A43XA (7MO FM OP), *** (V51NAM (10 MO FM MGR), ***CX1ITE (2MO FM OP) ***AH3C/KH5 (7MO FM MGR) ***9H*GGS (4MO FM OP).

Bureau QSLs received: None reported.

Thank You

Many thanks for the phone calls, notes, messages and get well cards sent to me on account of my recent illness. I am slowly recovering.

To all my helpers: Thank you! I appreciated very much the assistance received from the following: VK2DEJ, VK2QL, VK2EJX, VK2SG, VK2BQ, VK5OH, VK4ZIF, VK4DA, VK5QW, VK6UA, VK9UA, VK9NS, 908BV, T30JH, LZ1HA, 5W1KT, 7P8EB, and the DX bulletins: "QRZ SZ" and "The DX Bulletin".

Have a happy year. Good DX and 73.

POUNDING BRASS

GILBERT GRIFFITH VK3CQ
7 CHURCH ST, BRIGHT 3741

I must be getting old, like a lot of Morsiacs, because I think another year just shot through, and they're seeming a lot shorter too. Just in case you glanced at last year's column, and have not yet done anything about it, I would like you to read a bit from Tony Smith's final Morse Report. That's right, the magazine has closed. It goes under the heading "No Squatters' Rights" and should really have been seen first in our Australian AR, not the English one.

"No Squatters' Rights"

The Morse test is required by international regulations to protect official and emergency communications from interference, and no one would dispute that this need is growing less, particularly with the planned demise of maritime Morse in the coming decade. However, the Morse community needs to give notice to all concerned that even if the Morse test is eventually abolished by international regulation, the CW frequencies are not up "for grabs".

There is already considerable intrusion into these frequencies and CW operators identifying such intruders are strongly advised to report them to the RSGB's Amateur Radio Observation Service and to their own EUCW Clubs before it becomes a question of squatters' rights.

It might be asked why a column devoted to encouraging Morse operating should spend so much time reporting the views of those who wish to see the role of CW in amateur radio diminished. The reason is that those who wish to achieve something are usually more active in expressing their views than those likely to be affected — who are often blissfully unaware of what is going on until it is too late. It is important, therefore, to publicise such discussions or comments, particularly when they originate from persons or bodies in positions of influence.

There is a need for the CW community to defend the mode vigorously when it is unfairly treated, whether this is owing to over-enthusiasm by its critics for their own point of view, or their lack of understanding of the true role of CW in worldwide amateur radio.

I sure wish I had written that! Tony puts into understandable words the reasons why I

have been trying to stir up some Morsiac action over the past year or so. Why I was so annoyed because although a few clubs ran my proposal in their newsletters, the QRP Operator's Club flatly refused to run it. And why, when one does run off an idea, the critics' letters outnumber the supporters' by about 20 to one. Not to mention those who are indifferent but want to air their own ideas, but will not "run" them by themselves.

Books

Q & Z codebook reprinted

A reprint of the 82-page *Morsum Magnificat Q & Z codebook*, a comprehensive list of the Q-codes and Z-codes, including (one page) list of original Q-codes, dated 1912, is now available.

Codes no longer used are included in the listing, except where they conflict with later ones, and specific codes used by amateurs are also included, excepting those which conflict with official codes.

Copies are available from Dick Kraayveld PA3ALM, Merellaan 8, 3145 XE Maassluis, Netherlands, price (about) \$A10, including postage.

Morsum Magnificat

Available from 8a Corfe View Road, Corfe Mullen, Wimborne, Dorset BH21 3LZ, England. Payment by Access, Visa, Mastercard, about \$US14, so quote your card number and expiry date.

Introduction to Key Collecting, and Vibroplex Collector's Guide

Both by Tom French W1IMQ, available from Artifax Books, PO Box 88, Maynard, MA 01754, USA. (I hope to review them soon — stay tuned). Price for the Intro is \$9.95, and for the guide, \$14.95. Both plus \$4.00 p&p each.

Other News

Many Victorian (not Queen Victorian) friends and amateurs will be pleased to hear

that the Clive Burns Memorial trophy for the highest novice scorer in the CW section of our Novice Contest had a mention in *Morsum Magnificat* (number 17).

To celebrate the coming 200th anniversary of the birth of Samuel Morse, here are a couple of special awards available.

FOC Jubilee 1991...

To commemorate the 200th anniversary of the birth of Samuel FB Morse, the First Class CW Operator's Club will hold a special jubilee activity period, using CW, throughout the world. It is not intended as a contest, but more of a celebration of Morse code and its use in world-wide communication.

It will commence on the weekend of 27/28 April 1991, the actual anniversary date. Morse was 80 years old at the time of his death so the requirement (task) for non-FOC members is to work as many FOC members as possible within the 40-day period.

Frequencies 1.8 to 28MHz (not WARC bands) CW only.

Exchange RST plus club initials, if appropriate.

Send your details and log sheets to Peter Miles G3KDB, PO Box 73, Litchfield, Staffs, England, by 5 July 1991.

An engraved paddle goes to the non-FOC member with the greatest number of FOC contacts within the 40-day period.

Worked EUCW Award...

From the European CW Association, for contacts made on or after 27 April 1991. This one has a fee of US\$8, so if you want more details send me a SASE for the page of information.

Finally, a thought for the month...

According to Ohm, a duplication of voltage corresponds to a quadruplication of power. Thus if a station with 1000W output causes our S-meter to indicate S8 we would have:

1000W for S8 16W for S5
250W for S7 4W for S4
63W for S6 1W for S3

This also means that the station would only need 4kW for a full S9 report as received 99 per cent of the time!! But who would want to try to operate in the same state, let alone having a neighbour running kW powers? ar

EMC REPORT

HANS RUCKERT VK2AOU EMC REPORTER
25 BERRILLE RD
BEVERLY HILLS 2209

Amateur Radio vs Telephone

DJ1HP reports in CQ-DL 11/90 on the following EMC problem: Telecom-DL installed a dual telephone in his neighbourhood with a

PCM-Decoder. Both telephones were "affected" as soon as he started to transmit on 160m, 80m etc. The telephone wires in country areas are still running on overhead masts. The RFI-

Testing Service of Oldenburg demanded at first that he had to stop causing the "interference", which would have been the end of his amateur radio activity. When he complained, pointing out that the problem is not at all a case of "interference" but the result of a totally "insufficient immunity" of the PCM-Decoder to legally transmitted RF signals, the Telecom-EMC manager Mr Hohn investigated the case himself and confirmed DJ1HP's opin-

ion. Screening and installing chokes at the decoder had no effect. DJ1HP agreed to avoid transmitting during some important business hours of his neighbour. A Telecom work team arrived a few weeks later, digging a trench, placing the telephone cable underground over a distance of several hundred metres. Also the cable to the house and inside was now shielded. This correct action solved the problem without bureaucracy or a legal fight, which would not have solved anything, except the earnings of the solicitor would have been increased. All concerned were now happy.

2. 430-440MHz amateur band plus mobile telephone service:

The DARC submitted a number of questions to the Federal German Minister for Postal Services, Dr C Schwarz-Schilling, and one question was about possible EMC problems, which may arise when the two services wish to use the 70cm band. The minister stated: "The question of subdividing this frequency band will always be discussed with the DARC, but no decision will be made in the next five years! What will be the situation in other countries?"

3. RFI from photo-electric night-light switch, VK3CIS reporting:

The Taiwan-made device caused severe interference throughout the house, operating an incandescent globe. There is no warning to this effect on the package. (The interference caused by fluorescent lights is well known, but some packaging has at least a warning). The interference-causing device was returned to the dealer with an explanatory letter and a refund was requested. I now am using a photo-electric light switch "Type KD-90" made in Hong Kong, which does not cause any interference to nearby TV, VCR and Hi-Fi radio. It can be done! The bad device should not have been imported. The electrical safety test, carried out by our authority, should include a RFI test as well. That goes for computers as well.

4. "Radio Communication" October 1990 (RSGB) submitted by Norm Burton

a) EMC Standards update:
G4JKS describes the EMC Standards as they exist in the UK and, as far as they affect amateur radio, for example the 150kHz to 150MHz range (BS905 part 2, 2985). The European Common Market Standard

EN55020 is likely to be adopted by 1992. The susceptibility fieldstrength (test cell test) will be 125dBuV/m, (1.78 V/m) for radio and TV receivers — DL has now a limit of 3 V/m. It should not be that critical! Radio amateur experts (see earlier EMC Report) have shown that 10 V/m would be a more realistic and acceptable value. Some manufacturers have achieved immunity even at 50 V/m (tested by DL1BU).

b) Computer immunity is covered by a draft standard "pr EN 55101-3", and the test is to cover 30MHz to 1GHz.

c) Some manufacturers didn't want immunity standards at all, arguing that this was a "quality" aspect of their product. Sure enough, immunity to unwanted but legally transmitted RF signals is the one quality aspect we radio amateurs consider as absolutely vital.

d) G4JKS describes other EMC problems and draft standards: broad-band interference; quasi-peak detector; narrow-band interference; TV 15.625kHz line oscillator interference; household appliances; computers etc. **ar**

EDUCATION NOTES

BRENDA EDMONDS VK3KT
FEDERAL EDUCATION CO-ORDINATOR
PO BOX 445 BLACKBURN 3130

Firstly, my best wishes for the festive season to all readers, and may 1991 be a year of success and achievement for all in both personal and radio fields, and world peace.

I have on my desk a letter seeking my support for a submission for funding for a project aimed at introducing amateur radio to a specific community group. I have over the years seen or helped with the preparation of a number of these submissions. Some of them have been successful, and have resulted in the project being funded. The failures have sometimes been because of inadequate preparation of the submission, sometimes because of lack of vision on the part of those allocating the funds.

Each appeal — for funds, for use of facilities, for frequency privileges, whatever —

must justify the request by enumerating the benefits of amateur radio to the community, the particular group, or the individual. We usually talk of "a pool of trained personnel", "technological experimentation", "state-of-the-art electronics", "help in civil emergencies" or "knowledge and skills". We imply, whether intentionally or not, that every amateur is using the latest and best technical equipment, which is naturally home built and maintained, solely for experimental purposes.

The term "black box operator" tends to be used condescendingly and derogatively, as if these operators are second-class amateurs. Let me at the start of a new year appeal for tolerance and forbearance towards other amateurs' preferences. There are so many facets to our hobby these days, that we tend to

forget about those whose interests differ.

There is still a place among our ranks for those who just like talking to other amateurs, and meeting people half a nation or half a world away. It may even be that these people are the ones adhering most closely to the amateur radio ideals of friendliness, consideration and patriotism. The talkers have the potential to contribute more to national and international understanding and world peace than any other group. Where else but in amateur radio can an ordinary citizen of one nation talk unhindered to a counterpart in almost any other country in the world? Goodwill and friendship between nations grows from understanding between the citizens as well as between the leaders.

When I write my piece to back this submission, I will stress the value of personal contacts and international friendships as well as the localised and technological benefits. I wonder if it will affect the success of the submission if I also say that amateur radio is fun. **ar**

ANTENNAS & ACCESSORIES

We manufacture a comprehensive range of HF, VHF and UHF antennas, baluns, power dividers etc to suit your application. Three of our log periodics provide continuous coverage from 13-30 MHz including WARC frequencies, and replace outdated tri-banders. Now in use in 26 overseas countries and 6 continents.

- CREATE ROTATORS, COAX CABLES & NON-CONDUCTING GUY HALYARD MATERIALS.
- COMPLETE RANGE MIRE (USA) 5-YR WARRANTY 6M, 2M, 70CM AMPS & VSWR/WATT METERS
- HARD-DRAWN COPPER ANTENNA WIRE
- AUST/NZ DISTRIBUTOR FOR CREATE ANTENNAS/ROTATORS & PHILLYSTRAN (KEVLAR) NON-CONDUCTING GUYING

- MATERIALS.
- HIGH GAIN VHF & UHF AMATEUR, SCANNING & TV ANTENNAS.
- BUTT SECTION TRIANGULAR ALUMINIUM TOWERS FOR FIXED OR TILT-OVER APPLICATIONS (REFER MARCH/APRIL 1987 AR)
- SELECTION OF POWER CHIPS AND TX TUBES AT FRIENDLY PRICES.
- VSWR/PWR METERS TO 1300 MHZ 5 MODELS.

Write or phone for free catalogue

ATN ANTENNAS

PO BOX 80

BIRCHPI VIC 3483

56 CAMPBELL STREET BIRCHPI VIC 3483

PHONE: (054) 92 2224

FAX: (054) 92 2666

WARC-92 UPDATE

DAVID WARDLAW VK3ADW
WIA WARC COORDINATOR

Preparation for WARC-92 is proceeding at an increasing pace, with several of the CCIR Interim Working Parties which are scheduled to provide input to the CCIR Joint Interim Working Party for WARC92 already having met. One of these IWP 8/14 was held in Melbourne during August. This IWP dealt with the mobile satellite service and, amongst other things, was concerned with Low Earth Orbit satellites which in the mobile service are seeking up to 5MHz of frequency below 1GHz.

Although the CCIR cannot specify an allocation, it can point at certain parts of the spectrum. At the moment the USA is looking at frequencies on either side of the 144MHz band for a mobile satellite allocation.

Another problem addressed by the IWP was potential interference to the COSPAS SARSAT search and rescue satellites on 406MHz, by wind profile radars operating on the adjacent Meteorological Aids band. It is accepted that the wind profilers will have to be moved, and it is possible that the 78cm band which we share with Radiolocation may be considered. The dangers to the amateur satellite service have been emphasised, and

the amateur service's concern expressed at the WARC preparatory meetings.

HF Broadcasting expansion is a complex subject. As to date the new bands allocated at WARC 79 have not been planned, but all the same they are being occupied by HF Broadcasting stations.

J1WP 10, 6, 8, 9/1, which have just met, dealt with inter-service compatibility and sharing on HF. The IARU submitted a paper to this J1WP, parts of which have been incorporated in the report of the working party to J1WP WARC-92, which is the working party preparing the technical basis for WARC-92 on behalf of the CCIR. Also endorsed in the report was the fact that HF Broadcasting must move to SSB, and that the suggested date must not be allowed to slip any further.

The FCC in the USA has put out its Second Notice of Inquiry calling for comment on its draft proposals for WARC-92.

One proposal of great interest to the amateur service throughout the world is a change to the 40m band. The FCC proposes a worldwide amateur band 6900kHz-7200kHz to enable HF Broadcasting to fit in within Re-

gion 2 and still not disadvantage the amateur service.

The FCC states that any changes to the Frequency Table will require a reasonable changeover period.

An area of concern to the amateur service is one of the FCC alternative proposals for Satellite Sound Broadcasting. This proposal is to use 2390-2450MHz, and to eliminate the 2400-2450MHz amateur satellite band. This is, of course, only one of their options for BSS (sound).

There is also a FCC proposal for 420-421MHz as a mobile satellite band limited to low earth orbit satellites.

The IARU has drafted a report to IWP8/15 which is concerning itself with mobile, amateur and radio determination matters above 30MHz. The IARU paper details sharing and operational characteristics of the amateur service and predicted future developments.

As far as the amateur service is concerned, the output from IWP 8/15, along with that from J1WP 10, 6, 8, 9/1 will be very important in the preparation of the CCIR technical report to WARC-92.

The WIA has decided to send a representative as a member of the Australian delegation to J1WP WARC-92, remembering the important part that the Special Preparatory Meeting of the CCIR played in influencing the final outcome of WARC-79, particularly for the amateur service. **AR**

SPOTLIGHT ON SWLING

ROBIN L HARWOOD VK7RH
52 CONNAUGHT CRES WEST LAUNCESTON 7250

A new year has arrived and already I am wondering will it be as momentous as 1990 has been. The Cold War finally was dead and buried as the Iron Curtain was torn away, allowing a completely free flow of information to go in both directions. New voices emerged and shortwave radio did indeed reflect these historic European events. One nation disappeared into the history books, along with its external broadcasting voice, on 3 October.

Will this year also throw up some surprises? The demise of the Cold War has brought into sharp focus the future of several US governmentally funded international broadcasters. Congressmen struggling to rein-in the huge Budget deficit have been seriously questioning the need to continue to fund Radio Free Europe and Radio Liberty, especially since the emergence of a free non-governmental broadcasting structure within Eastern Europe.

Yet, the continued viability of shortwave broadcasting was clearly demonstrated when the Iraqis invaded the tiny Gulf Emirate of Kuwait on 3 August. Thousands of expatriates were stranded as a result, and shortwave broadcasts became the sole means of communicating with them.

Perhaps we will see the major broadcasters

specifically targeting those areas where a large listener audience to shortwave radio stations will exist in the future. These predominantly are in the Afro-Asian regions where there is limited access to television and/or other sophisticated electronic hardware. The average listener will still be using a cheap analogue multiband portable. Recent audience research in Latin America indicates a marked decline in levels there, as television replaces radio as the primary communications medium.

Audiences in the industrialised world have also seriously declined, leaving only expatriates or a handful of radio hobbyists, who often aren't that interested in the specific program content. That is why many broadcasters have been seriously investigating co-operative schemes whereby programs could be carried via local stations on AM or FM without the enormous cost incurred by erecting relay stations on shortwave.

Next year there will be a major international conference to decide the future of the electromagnetic spectrum. This will be held in Barcelona, Spain, and you will read elsewhere in this magazine why this is of vital importance to the amateur community. Although there has been pressure to dramatically increase the allocation to broadcasting, I would expect to see international HF broad-

casting slowly decline as more efficient means of information delivery emerge.

Just a few weeks ago, I was scanning around the 42m allocation when I came across a well-known Australian DJ with "Classic Top 40 Countdown". My initial impression was that of a pirate station relaying a domestic AM station. Imagine my consternation and surprise when the station ID came around as the World Service of Radio Moscow. Glasnost indeed! The program had numerous flashbacks to events in Australia in the early '70s. The content was more Ocker than Russian. Apparently the DJ has entered into an agreement with the Radio Moscow organisation to carry this locally produced program. Tune in to Moscow on Friday nights and hear for yourselves. (That is, if they are still carrying it!)

Radio HCJB in Ecuador recently purchased several ISB senders from the Swiss PTT. These 30kW units have already been put into service with reduced carrier USB. There is one on 25950kHz using a vertical antenna. I have heard it occasionally during daylight hours, even in one instance as late as 1200 UTC. Recently, the second sender was brought into operation on 21455kHz. This is easily heard here in Australia, as they are feeding it into a rhombic that is directed to the South Pacific and Europe. Both of these operate around the clock and have become a good propagation guide. Reports are desired.

Well, that is my first column for 1991. If you have any news or comments, feel free to drop me a line to the above address, or via packet, to VK7RH@VK7BE-1. Until next time, the very best of 73 and good listening! **AR**

RANDOM RADIATORS

RON FISHER VK3OM and
RON COOK VK3AFW

The VK-Window

We have had a number of articles about the Window antenna but I think we have something new to add. The old-timers spoke highly of the Window but, with the growing popularity of 50ohm output transmitters, antennas such as the Window lost popularity in favour of antennas fed directly with coax. As time goes by I gain more respect for the old-timers and recently became convinced that the Window perhaps did not deserve the bad name it appeared to have acquired. I therefore set out to analyse the antenna on a theoretical basis.

Firstly I wondered why the tapping point was claimed to give a good match on four bands. The reason can be deduced from Fig 1 which shows the current distribution on an 80m dipole at resonance on 80, 40, 20 and 10 metres. Only the left half is shown as the picture is symmetric about the 90° point. At a point equal to 60 electrical degrees in from the end (on 80m) the current amplitude is the same for even multiples of the fundamental frequency. It seems quite possible then that the resistance seen at that point will be similar on all these frequencies. The tap at the 1/3 point might have a good engineering base!

Next I ran the Window through a computer program called MININEC3 which is a useful tool for analysing a wide range of antennas for feed impedance, gain and polar pattern. I used a 2mm diameter wire, 136ft long wire tapped at 44ft 4in from one end. The results are shown in Table 1.

Table 1

Window Feed Impedance	
Frequency MHz	Impedance Ohm
3.6	98 + j41
7.1	136 - j26
7.2	142 + j44
14.3	125 + j10
28.6	345 + j166

Free space calculated impedances. See text for details of dimensions.

By performing many calculations with slightly different frequencies the resonant frequency can be found. The real (resistive) component of the feed impedance will be within 10 per cent of the above values. For the lowest three bands the Window has a feed resistance at resonance that averages 120 ohms roughly. No wonder the ARRL handbook says that the claimed feed resistance of 300 ohms is more wishful thinking than fact! However, on 10m the feed resistance at resonance is near 300 ohms. Radiation patterns are essentially as given in the standard handbooks for half, one, two and four wavelength dipoles.

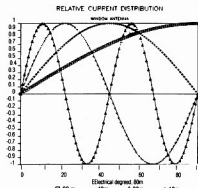


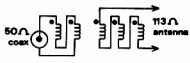
Figure 1. Relative Current Distribution. Window antenna, one half only shown. 0 degrees corresponds to one end, 90 degrees to centre for fundamental resonance on 80m.

The next thought that occurred was that the lowest three bands could be reasonably well matched with a suitable balun but 10m would remain a problem. Suppose 80m was sacrificed by making the antenna half size resulting in a matched antenna for 40, 20 and 10m. The best match obtainable for a simple matching device comes close to the ideal ratio, transforming 50 ohms by a factor of 2.25:1 to 112.5 ohms. This would give about 1.2:1 VSWR on 40m and better than 1.1:1 on 20 and 10m. Coax feed and no ATU required!

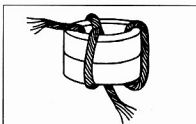
In spite of the rural image Australians have, very few live in the country on farms where the erection of large wire antennas is a trivial matter. Most of us live on small blocks, about five to the acre, and putting up an 80m dipole is often quite difficult. A smaller antenna is also desirable from the point of view of visual impact on the neighbours. Thus an antenna with a span of only 66ft has considerable attractions for VK amateurs, hence the name for this version of the Window, the VK Window.

To test the theory I built and tested a VK Window, using 2mm diameter hard-drawn copper wire, 66ft long tapped at 22ft from one end. The insulators were obtained from Dick Smith.

The novel feature is the use of a 2.25:1 matching transformer instead of the 4:1 balun used (as we can now see incorrectly) for the Carolina Window. (It should be noted that in some articles describing the Carolina Window it is clearly stated that an ATU is required.) I had intended to use a transmission line type balun but found that the desired ratio and balanced to unbalanced connection was apparently not possible with one core. It might be possible, but my reference (Trans-



(a) Transformer wiring



(b) Three turn x 5 wire winding on two FC501 cores

Figure 2. Matching Transformer. This RF transformer gives a resistance ratio of 2.25:1 and is effective from less than 7 MHz to more than 30 MHz.

mission Line Transformers by Jerry Sevick (W2FMI) did not show me a suitable circuit and I could not work one out for myself. In the end I resorted to an RF transformer wound in a similar manner to a transmission line balun. I took five strands of single core, silver-plated teflon-insulated wire and twisted them together to make one cable. I wound this through two ferrite cores stacked together to form three turns. Two wires were connected in series for the 50 ohm side and the remaining three in series for the antenna side (113 ohms). The core material was a toroid, part number FC501, which was purchased from Stewart Electronics. The core was placed on a pad of roof and gutter sealant in a small diecast box. The coax was run in through a small hole at one end and two insulated wires through holes at the other. After soldering to the transformer core sealant was used to waterproof the box. The lid was screwed on and coaxial connector sealant used to seal the screw holes and lid edge. The two wires were then soldered to the antenna. See fig 2.

The antenna was suspended from my 40ft tower at the feed point and the ends run to the two side fences. The short end of the new antenna was almost vertical, not a feature that I had wanted but unavoidable given the physical limitations of my QTH. The VSWR was measured and found to agree well with predictions made from the computer program. The curves are shown in Figs 3, 4 and 5. The variations are partly due to inaccuracies in VSWR measurements and the limited resolution of the VSWR measurements. The antenna was fed through a 60ft length of RG58. It can be seen that the resonant frequencies are not exact multiples of the fundamental. This is due to the end effect, and means that mid-band resonance on 20m is achieved with

resonance on the low end of 40m. Fortunately, this combination fairly closely matches the high activity areas of the three bands.

Comparative tests were made with a G5RV wire antenna and a W8JK beam. On 40m the VK Windom performed as well as the G5RV. It was better for stations to the north, such as JAs, but not as good for stations off the end such as Ws. The differences did not exceed about one S unit and can be readily explained by differences in orientation of the two antennas. A similar result was obtained on 20m, but on 10m the VK Windom was superior in all directions, by about two S units into Europe, for example. It was almost as good as the beam in some directions.

So, if you need a cheap and easy-to-build antenna, suitable for suburban installation, not requiring an ATU yet providing both local and DX capability, coaxially fed, without awkward traps and with off-centre feed for restricted spaces, then the VK Windom is for you.

The disadvantage is the restriction to three bands as above or, if you have the room, 160, 80 and 40 with a double size Windom or 80, 40 and 20 for the standard size. All band operation is possible with open-wire feeder and a balanced ATU. Using a balun may not be possible on some bands.

Loose talk can cause trouble

Here is a letter from Peter VK3BWD, which is self-explanatory.

"Reference your RRs October 1990; specifically your comment on page 46: 'Whilst other designs such as log periodics may sport as many elements and offer a wide bandwidth, many exhibit no more than 6dB gain (6dB over a dipole).'
By the use of a little loose terminology you will have confused some readers about the difference between the Log Periodic Dipole Array (LPDA) and the Log Yagi and by some further confusion of the gain bandwidths re-

lationships for these two classes of antenna you give a quite wrong impression of the comparative gain figures for Monoband Yagi, Log Yagi and LPDA.

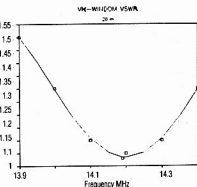


Figure 4. VK-Windom VSWR, 20m. The resonant frequency is about 14.2MHz and the VSWR is sufficiently low across the whole band for an ATU nor to be required. Calculated VSWR is less than 1.1:1 at resonance.

lationships for these two classes of antenna you give a quite wrong impression of the comparative gain figures for Monoband Yagi, Log Yagi and LPDA.

Like the study you quote, Lawson¹ and Viezbicke² have established the number, taper and spacing of elements for various design objectives. Lawson in particular established that the necessary, if not sufficient, condition for optimum forward gain is a long boom-length which now distinguishes a class of Yagis. To quote him: "The simplistic design is as good as any design for boomlengths less than one wavelength."

Now the gain conditions you attribute to log periodics (sic) are characteristic of LPDAs of moderate boomlength and huge bandwidth, which makes their introduction to the discussion of 50MHz long-boom monobanders curiously irrelevant.

In the case of the LPDA, the gain will depend on the number of elements in the active region and whether the design has more than one active region over the operating frequency band. Gain will be a complex function of taper and spacing parameter which set the boomlength and number of elements, but have to be chosen to maintain the backfire condition of the antenna over the operating bandwidth as well as provide a practical mechanical design.

In Rhodes³ Log Yagi design, the log cell contributes intrinsic gain as do the parasitic elements. In a sense this is incidental to the purpose of the log cell, which is to increase the frequency over which the pattern, forward gain, FTB ratio and input impedance are essentially stable. The combined gain of the cell and parasitics is a complex function, not entirely characteristic of Yagi spacings nor of LPDA taper and spacing. The published studies of the log Yagi by Rhodes and Johnson⁴ have not yielded any convincing algorithms for calculating forward gain. Johnson estimates that the gains from a single director

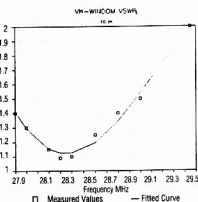


Figure 5. VK-Windom VSWR, 10m. The resonant frequency is about 28.35 MHz and operation up to about 28.8 MHz is possible without an ATU. Calculated VSWR at resonance is less than 1.1:1.

and reflector at around 4 to 4.5dB over the log cell which, in the usual three or four-element configuration, he estimates contributes around 6dB. Rhodes claimed the gains for the compact Log Yagi were comparable with many monoband Yagis and that the incremental gains from additional parasitics followed those for Yagis. He felt these gain improvements were of marginal utility measured against the loss of the compact form.

KLM sells Log Yagis based on Rhodes' design for HF and VHF including the following examples for 6m. Whilst I treat manufacturers' claims for gain with some scepticism, I think the following examples from the KLM catalogue make useful comparison with the optimised Yagi design quoted in your Table 1. [AR p46].

I think we can say that the bulk of evidence suggests that this particular form of log periodic illustrated by the KLM 50-52-8 is not as much as 5dB down on an optimised Yagi such as the nine-element one in Table 1 [AR p46]. I think this applies whether we consider forward gain at the centre frequency, gain over the operating bandwidth or even the front-to-back gain.

KLM 50-51-5
Five elements
Gain 9.7dBd
FTB 30dB typical
Boom length 11.7ft (3.59m)
KLM 50-52-8
Eight elements
Gain 12dBd
FTB 30dB
Boom length 18.25ft (5.57m)
KLM 50-52-11
11 elements
Gain 14dBd
FTB 30dB
Boom length 30ft (9.16m).

I am not at all sure why anyone would wish to make a monoband LPDA to cover a band-

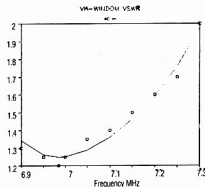


Figure 3. VK-Windom VSWR, 40m. The resonant frequency is just below the amateur band but no ATU is required up to about 7.15 MHz. Calculated VSWR at resonance is 1.2:1.

width as narrow as 2MHz at 50MHz, bearing in mind the mechanical complication involved. However, for $B= Fh/F1=1$ using gain optimum spacing and taper the following element versus gain table results:

N	l/λ	B_s	dBd
4	0.34	2.02	5.9
5	0.52	1.67	7.0
6	0.73	1.52	8.0
7	0.91	1.39	8.9
8	1.12	1.30	9.7
9	1.33	1.26	10.2
10	1.48	1.22	10.6

N= number of elements

dBd = directivity gain over dipole

l/λ = array length in wavelengths

B_s = structure bandwidth where $B_s = B \times B$ and

B = bandwidth of active region.

This table is abridged from a shortened design algorithm due to Scholz & Smith⁴, but I have run the eight and 10-element design figures through Carrel's⁶ computations and they check out for the number of elements and approximate gain.

I reiterate I cannot conceive why anybody would build a nine-element LPDA more than 8m long to achieve a frequency independent bandwidth of this sort for the 6m band, but the evidence suggests that if they did they would not be 5dBd short of the Table 1 Yagi. More importantly, the table above suggests that, by the time directors and a reflector are added to a four-element log cell, it might be very difficult to build a log Yagi having only 6dBd gain. [If it were desired to have a beamwidth where the 3dB points were at 3dB it might be better to unhitch one side of the coax].

The beauty of the Log Yagi and the popularity of the KLM variant for all amateur bands lies in the compromise which it achieves. Mechanical complexity intermediate between the LPDA and the through-the-boom Yagi. Comparable gain to all but optimised Yagis with a greater bandwidth for stable pattern, gain and input impedance [and black box to boot!]

Let me summarise with an argument as loose as your own.

The only time a log periodic needs to have a gain of 6dBd or less is when it has to fit an amateur's wallet.

References

- (1) Lawson James, Yagi Antenna Design, Book, ARRL.
- (2) Vezibic P, Yagi Antenna Design, NBS Tech Note 688.
- (3) Rhodes P, Cross a Yagi with an LPDA, QST Dec 1976.
- (4) Johnson Leo D, Log Yagis Simplified, Ham Radio, May 1983.
- (5) Scholz, P A & Smith G E, Log Periodic Antenna Design, Ham Radio, Dec, 1979.
- (6) Carrell, R. The Design of Log Periodic Dipole Antennas, 1961 IRE International Convention Records S Pt 1 Ant & Prop

pp61-75.

In my (Ron#2) defence, I suggest that while in the USA where the term "Log Periodic Dipole Array" is in wide use, L A Moxon G6XN, well-known author of many articles on antennas, uses the term "log periodic" in his book "HF Antennas for all Locations", in the same sense as I used it in the offending article. I accept that the correct description is Log Periodic Dipole Array (LPDA) and apologise to any readers confused by my article. I had in mind an antenna covering a three-to-one bandwidth from roughly 50 to 150MHz with a boom of moderate length. Such an antenna usually has no more than three elements contributing on any one frequency. It is equivalent to a great many three-element beams and is an excellent arrangement if a wide bandwidth is required and both HF and VHF versions are commercially available.

I do not consider 2MHz at 50MHz to be a particularly wide bandwidth, nor do I consider the Yagi designs with broadband multi-element drivers to be log periodic antennas in the strict sense as they do not have a repetitive (periodic) structure. A Yagi with an elaborate feed is still a Yagi. (The purist will argue that the Americans got it wrong and it should be called a Uda after its inventor, but that's another story). It is generally true that a Yagi will have a gain related to its boom length regardless of the feed arrangement. The Log Yagi was called the Swan Yagi back 20 years ago when ATN Antennas first started making them. However, I will try to remember to call them Log Yagis in the future.

Contrary to Peter's belief, I was not advocating the use of a LPDA as a narrow-band antenna. While Lawson's computer analysis shows that good performance can be obtained with straightforward design for short-boom lengths, the thrust of the DL6WU work was to overcome the problem encountered in practice of gain falling as boom length was increased. While Yagis with up to six or seven elements can be designed readily and achieve good performance, the design of Yagis with gains above about 10dBd has been dependent upon much cut and try for optimisation. I well remember witnessing tests on one long-boom Log Yagi that had as much gain when half the boom was removed as when it was full length.

DL6WU has devised a design process which allows very long Yagis to be built from the paper design and achieve the anticipated performance without adjustment. Some stations are working moonbounce with a single DL6WU Yagi!

The gain figures quoted for the KLM Yagis are about 2dB higher than Lawson's theoretical maximum gain and the Front to Back (FtB) figures are not supported by his analysis. However, the benefits of these antennas are as stated by Peter, good gain and F1B with a low VSWR right across the band.

To conclude, firstly equating my "log periodic" to a wide bandwidth LPDA will avoid most confusion. Secondly, I do not consider a Log Yagi to be a true "log periodic". Thirdly, the construction of long-boom high-performance Yagis using a theoretical design procedure had not been particularly successful until the DL6WU design data were derived. All successful long-boom Yagis were the result of extensive experimental work after an initial "stab" using a theoretical design. By long-boom Yagi I mean one with a boom exceeding two wavelengths, something which is only practical for most people at VHF and UHF in particular. For booms of less than one wavelength then, the Lawson approach would be fine. There is room for argument over the approach to be used in between.

The points that I wanted to make in the offending article were these: A high-gain antenna requires a long boom and the Yagi is, in my opinion, the best option. The bandwidth of a LPDA is traded off against gain. A three-octave bandwidth and moderate boom length are incompatible with high gain.

While an LPDA could be constructed as a monoband antenna on a long boom and give gain close to that of a Yagi with the same boomlength, the construction of a Yagi is so much easier that there seems little point in considering an LPDA for such an application. The use of a few LPDA elements to replace a single-folded dipole feed can result in a considerably greater VSWR bandwidth with little effect on gain.

Lastly, of late my pocket seems to have been subject to considerable attenuation and achieving a gain of more than 6dBd at HF is for the present out of reach. Thanks for raising several interesting points, Peter.

73 FROM ME AND 73 FROM HIM
ar

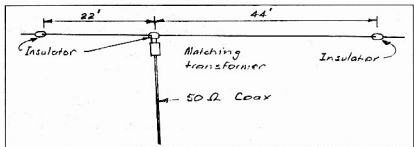


Figure 6. Schematic Drawing of VK-Windom. The radiator is 2mm diameter H.D. copper wire.

ALARA

JENNY ADAMS VK3MDR

70 KANGAROO GROUND RD WATTLE GLEN 3096

Last month it was Seasons Greetings; this month I would like to wish you all a happy and peaceful New Year. Deadlines so dictate that at the time of writing we have not yet celebrated Christmas, but will well and truly have done so by the time you are reading this. So much for trivia.

Ladies, why not join us on our Monday night net? 3580 +/- QRM UTC 1030 except during daylight saving (from last Monday in October to second Monday in March 1991) 1000 UTC. If you haven't got a licence as yet, just convince a licensed member of the family to do some work in the shack during the net time. There is one YL who does this. You would all be most welcome.

While we are on the subject of nets, here is

a list of other YL nets.

YLXN net "222" is held on Mondays 14.222 0600 UTC.

Bev VK6DE would like to chat to YLs on Fridays on 21.1888 0400 UTC. Poppy VK6YF conducts the VK6 ALARA/YL net on Mondays 3585 +/- 1200 UTC (after the National ALARA net).

Congratulations to Dorothy VK2DDB, our new VK2 representative. Here is a list of our other state representatives:

VK3 Bron VK3DYF
VK4 Margaret VK4AOE
VK5/8 Maria VK5BMT
VK6 Poppy VK6YF
VK7 Helene VK7HD

Please contact them if you would like any

information regarding the Australian Ladies Amateur Radio Association, including membership, which for any VK is \$8.00 per year.

During the past week I received yet another letter with a suggestion on how to stop feathered aerialists using beams as landing strips. Thank you to Selwyn ... The idea he proposes is not his own. He believes he saw it in a book review in an electronic magazine. The book may have been "Hints and Kinks" (from articles which have appeared in QST).

The hint said to cover the elements with pieces of electrical conduit (plastic) When the bird lands, the conduit rotates and the bird goes elsewhere.

That is all the review said. I guess it would be better to cover the elements with a lot of small pieces rather than one large bit. You would have to have some sort of disc to prevent the pieces working their way off the end of the element. For the boom, pieces of plastic water pipe could be used (but keep in mind the antenna tuning will be affected). 73,33 **ar**

AMSAT AUSTRALIA

MAURIE HOOPER VK5EA

11 RICHLAND ROAD NEWTON SA 5074

PACKET: VK5EA@VK5WI

National Co-ordinator

Graham Ratcliff VK5AGR

Packet Address: VK5AGR@VK5WI

Information nets

AMSAT Australia

Control: VK5AGR

Amateur check in: 0945 UTC

Sunday Bulletin commences: 1000 UTC

Primary frequency: 3.685MHz

Secondary frequency: 7.064 MHz

(7.064 MHz is the frequency presently in use)

AMSAT SW PACIFIC 2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Australia newsletter and computer software

The excellent AMSAT Australia Newsletter is published monthly by Graham VK5AGR on behalf of AMSAT Australia and now has over 310 subscribers. Should you also wish to subscribe, send a cheque for \$20 payable to AMSAT Australia addressed as follows:

AMSAT Australia, GPO Box 2141, Adelaide 5001.

The newsletter provides the latest news items on all satellite activities and is a "must" for all those seriously interested in amateur satellites. Graham also provides a Software Service in respect to general satellite programs made available to him from various

sources. To make use of this service, send Graham a blank formatted disk and a nominal donation of \$10 per item to AMSAT Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other AMSAT Australia services send a SASE to Graham.

PACSAT Data Specification Standards

Harold E Price, NK6K and Jeff Ward, G0/K8KA

Abstract

This document provides a standard way of describing PACSAT data formats in specifications, and provides certain assumptions for implementers.

Purpose

This document describes the standard format for PACSAT data.

Background

This standard is based on the following assumptions:

1) The spacecraft are the critical resources in the PACSAT/ground station network. If a particular data representation can conserve memory space and CPU cycles in the spacecraft, all other items being equal, the representation that favours the spacecraft should take precedence.

2) The UoSAT and the AMSAT-NA

PACSAT hardware are based on an Intel 80186-compatible device. Therefore, all internal multi-byte numeric data is stored with the least-significant byte in low-order memory.

3) The UoSAT and the AMSAT-NA PACSAT software is largely based on the Microsoft C programming language.

4) The UoSAT and the AMSAT-NA PACSAT software development systems are based on IBM PCs or compatibles.

Discussion

The primary decision to be made in PACSAT data formats is "big endian" (BE) vs. "little endian" (LE). Most network standards are defined as BE, meaning the Most Significant Byte (MSB) of multi-byte data appears in low order address space, and the Least Significant Byte (LSB) appear in high order memory. The UoSAT and Microsat spacecraft all use Intel 80186 or compatible CPUs, which store data with the LSB first, and are LE.

Multi-byte data appears in many places in PACSAT data, including the file headers and the control structures of the broadcast and FTLO protocols. If these protocols were BE, the spacecraft would need to swap byte order in several places. Whether done as in-line code or as function calls, these conversions use both CPU cycles and code space. It is clear that a native data representation will result in a more efficient utilization of the spacecraft CPU, and that the data format conversions, if any, should be done on the ground. Experimentation was done showing that avoiding byte swapping on the spacecraft resulted in significant space savings.

This will not affect the actual high-level software code, as prudent programmers who wish to write transportable code that is applicable to BE and LE hosts will use macro calls to swap the byte order when moving data from

an external source to local variables. By using the somewhat less common LE in the protocol specification, the macro will be active on BE systems while would normally be active on LE systems. In any case, the macros would still be present in the source file.

For example,
 fnum = NETSWAP32(broadcast-head.fnum);

would be the line of code to read in the file number from a broadcast protocol frame. This code will be the same no matter which order the protocol required the 4-byte integer field to be in.

Taking these assumptions into account, the standard to be used when defining data exchange formats between PACSAT and a ground station are as defined below.

Intended Applicability

This document is primarily intended to apply to shared file formats, such as the standard PACSAT File Header; and to PACSAT specific protocols such as the PACSAT Broadcast Protocol. It is not meant to infer that existing protocols, such as IP, are to have integers byte-swapped when transmitted to a PACSAT.

PACSAT Data Structure Specification Standard.

- 1) All structure definitions in PACSAT standards documents should provide C structures wherever possible to describe data formats.
- 2) All structures are assumed to be packed; do not assume slack bytes are provided to align words and double words.
- 3) All multi-byte numeric data is assumed to be stored and transmitted with the Least Significant Byte first.
- 4) Where it is necessary to number bits, the least significant bit is zero.
- 5) The standard method for referring to hexadecimal constants will be the C standard 0xhh.
- 6) The assumed length of an unsigned or int type is 16 bits.
- 7) The "left" end of a string is stored and transmitted first.
- 8) "ASCII" characters are the printable ASCII characters 0x20-0x7f.
- 9) Times are represented by the UNIX 4-byte unsigned integer counting the number of seconds since 0000 UTC 1 January, 1970.

HR AMSAT NEWS SERVICE BULLETIN
 321.04 FROM AMSAT HQ

Efforts to Understand WO018 Attitude Continue; New Picture Software Uploaded

Ground controllers at Weber State University (WSU) are continuing their efforts to analyze the attitude behaviour of WEBER-

SATELLITE ACTIVITY FOR AUGUST/SEPTEMBER 1990

1. Launches

The following launching announcements have been received:

Int'l No	Satellite	Date	Nation	Period min	Apog km	Prg km	Inc deg
1990-							
076A	COSMOS 2097	Aug 28	USSR	706.9	38881	619	62.8
077A	BS-3A	Aug 28	Japan	672.0	37905	177	28.8
078A	COSMOS 2098	Aug 28	USSR	109.2	2001	407	82.9
079A	SKYNET 4C	Aug 30	ESA	1411.0	35869	34719	4.4
079B	EUTELSAT-II F1	Aug 30	ESA	758.5	35866	6509	3.4
080A	COSMOS 2099	Aug 31	USSR	88.7	258	191	82.3
081A	FENGYUN	Sep 03	China	102.7	894	879	98.9
081B	PRC-31	Sep 03	China	102.8	896	882	98.9
081C	PRC-32	Sep 03	China	102.7	894	875	98.9
082A	RESURS-F9	Sep 07	USSR	88.8	267	193	82.6
083A	COSMOS 2100	Sep 14	USSR	104.9	1026	978	82.9
084A	MOLNIYA 3-39	Sep 20	USSR	735.0	40782	454	62.7

Bob Arnold VK3ZBB ar

AO-13 Schedule 01Jan91 to 09Feb91

Station: Adelaide

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01Jan	bb																							
02Jan																								
03Jan																								
04Jan																								
05Jan																								
06Jan																								
07Jan																								
08Jan																								
09Jan																								
10Jan																								
11Jan																								
12Jan																								
13Jan																								
14Jan																								
15Jan																								
16Jan																								
17Jan																								
18Jan																								
19Jan																								
20Jan																								
21Jan																								
22Jan																								
23Jan																								
24Jan																								
25Jan																								
26Jan																								
27Jan																								
28Jan																								
29Jan																								
30Jan																								
31Jan																								
01Feb																								
02Feb																								
03Feb																								
04Feb																								
05Feb																								
06Feb																								
07Feb																								
08Feb																								
09Feb																								

AO-13 Transponder Schedule 01Jan91 to 25Mar91

Mode-B : MA 000 to MA 165
 Mode-JL : MA 165 to MA 190
 Mode-LS : MA 190 to MA 195
 Mode-S : MA 195 to MA 200
 Mode-BS : MA 200 to MA 205
 Mode-B : MA 205 to MA 256
 Omnis : MA 240 to MA 030

SAT-OSCAR-18 (WO-18). They have observed over the past several months that WO-18's Z-axis spin rate has been slowly decreasing. In an effort to understand this phenomenon, the students in the Computer Science Department are building a database to store the past ten months of real-time telemetry and Whole Orbit Data (WOD) collection. This will allow

engineers to retrieve data and plot telemetry parameters quickly for analysis. Storing this much data immediately present a significant challenge in view of the enormous volumes of data involved, however, ground controllers will have valuable tool in order to characterize spacecraft motion and health.

To cope with the slowing of the spin rate of

WO-18 and to enhance picture taking, new on-board software has been uploaded to WO-18. This imaging software has the added "smarts" to look at the solar array (S/A) currents, wait for a specified S/A current, and then snap a picture. By using solar array currents, WSU engineers will use this information to predict when the CCD camera is earth pointing and thus produce better pictures.

In the upcoming weeks, new software will also be loaded to include the CCD Light Spectrometer data in the telemetry. The spectrometer is designed to measure the spectrum of sunlight reflected from the earth's atmosphere. This will provide scientists with the composition of the atmosphere at specific places and times.

Radio amateurs who wish to process WO-18 images can obtain more information about WEBERWARE 1.0 from the AMSAT Software Exchange at AMSAT-NA HQs or from AMSAT-Australia GPO Box 2141 Adelaide SA 5001

HR AMSAT NEW SERVICE BULLETIN

321.5 FROM AMSAT HQ
SILVER SPRING, MD NOVEMBER 17, 1990

Engineering Team reports on current status of Microsats

Beta testing of the new PACSAT BBS software uncovered a minor bug which could only be discovered while the bird was being used by multiple stations. After analysis of a memory dump from AO-16, the failure mode was discovered and was reproduced on a ground-based Microsat simulator. The problem was fixed and AO-16 was scheduled to be reloaded with the new code during the weekend of 17 November 90.

The AMSAT Microsat Engineering team has generated the following update on all the Microsats dated 16 November 90:

AO-16

AO-16 is currently running the basic command and telemetry system, without the Whole Orbit Data (WOD) routines. This is in preparation for a full reload this weekend with an updated operating system. Fixes

include various improvements in memory utilization, making more memory available to application programs. This operating system will support the first production version of the file server software, loading will start this weekend. The new version will support the full 8 megabyte file system.

DO-17

No Changes. Uploading of new software is planned for December.

WO-18

The version 3.0 imaging software was unloaded 11/13/90. The 3.5 version was loaded 11/14/90. This version uses the arrays currents as well as the horizon sensors in the attitude determination algorithm. A variable time has been added in order to allow a longer time for constraints to be met before an image capture is triggered.

LO-19

No Changes. Uploading of the Pacsat file server is planned for late November. **ar**

WICEN

VIA TIM MILLS VK2ZTM c/o PO BOX 1066 PARRAMATTA 2124

Second Gladesville/AUSSAT Test

The major theme in the second ATV test though an AUSSAT transponder on the

30th January 1991 will be WICEN. The Federal Co-ordinator, State Co-ordinator and the various groups are invited to compile a taped segment for inclusion. It should be self contained with a head and

tail to announce the particular group or Co-ordinator and contain a report about that group. Length, up to ten minutes. Tape format, use a new tape and U-matic preferred but can be Beta, VHS or Video 8. Advise the VK2 Division or direct to Gladesville ARC, PO Box 48, Gladesville 2111 or (AH) phone 02 427 0530 now if you will be taking part. Confirmation of material by January 9th and delivery by 22nd January. **ar**

DIVISIONAL NOTES

VK2 NOTES

TIM MILLS VK2ZTM

To all Divisional members and readers, may I on behalf of the Council and office bearers wish all a Happy New Year — or as much as the circumstances permit.

The fees for the various Divisions are to be found on page 3 of this AR. The full and associate fee for VK2 is \$65.00 for 1991; the student and concession grade \$52 and family and non-AR fee is \$38.00. If your renewal became due on the first of this month, why not take advantage of the three-year renewal period (except students). Your renewal has to reach the Federal Office by 18 January so that an address label for the February Data issue of AR is available for you. Late renewals may not have a copy available.

Divisional Office and Broadcasts

The Divisional Office re-opens on Monday 21 January at 11am. During the break, normal correspondence to the Division should go

to (mail) PO Box 1066, Parramatta 2124; fax to (02) 633 1525 or to the phone-answering machine on (02) 689 2417. It will be handled over this period, as staff and councillors are available. The broadcasts for the break are pre-recorded, morning only up to 6 January. The live transmission starts again on Sunday 13 from VK2WI, for morning and evening, at 10.45am and 7.15pm. Many of the other Divisions' broadcasts take a break at this time of the year, so if you want to keep up with news, then have a look for VK2WI on 7146 and 10125kHz morning, and 3595 and 10125kHz evenings. Plus 28320kHz if the openings are right.

Gladesville/AUSSAT Test

A second test is scheduled for Wednesday evening 30 January. Listen to VK2WI (or some other Divisional broadcasts) for satellite and transponder details. It may be on a national beam this time.

QSL Bureau

Would members please note a minor change in Bureau operation. All questions, card-

handling payments, callsign changes etc are to be sent in writing to PO Box 1066, Parramatta 2124. No phone enquiries can be taken at the office as the staff are not involved. Cards for OUTWARD despatch should be sent, as usual, to PO Box 73, Teralba NSW 2284, or left at the Parramatta office.

February Exam

The next Divisional exam is scheduled for Tuesday evening 19 February. The closing date is 29 January. Details and application forms from the office.

A New Year

The Divisional year begins on 1 January. It will not be long until the call for council nominations (during February), this year the council contains nine members. The AGM comes up late April. The Gosford Field Day will be on Sunday 17 February, the usual venue of the Gosford Showground. The Parramatta Trash and Treasure for January will be a week earlier — Sunday 20 at 2pm due to the normal weekend being part of the holiday weekend. The VK2RWI packet radio facility was recently upgraded. There are minor operational changes. Would clubs and groups please complete their information forms and

return same to the office if still outstanding. These allow the Division to inform callers about you. To lighten, or maybe increase, the council workload, meetings are now twice a month. If you have a WICEN enquiry, ask your club, for all were recently sent an information kit, or WICEN (NSW) Inc at PO Box 123, St Leonards NSW 2065.

New Members

Twice-monthly council meetings will enable a quicker processing of new member applications. A warm welcome is extended to the following who joined the NSW Division during November:

J Carras	Assoc	Bexley
S Churchill	Assoc	Miranda
A Ruedlinger	Assoc	Strathfield
W V Thibault	VK2FOX	Tamworth
E D Williams	VK22VEC	Springwood

VK3 NOTES

JIM LINTON VK3PC

Retrospect on Year 1990

The Inwards QSL bureau has had a successful first year under its new way of operation via participating clubs acting as QSL card distribution points.

Using a computer data base listing of all registered users it is an extremely efficient operation.

In a dramatic overhaul of this important membership service, action was taken to ensure non-WIA members did not benefit without contributing to the bureau's running costs.

Most members fully support this action against those who don't pay their way.

Since the new bureau began operation a year ago as a free membership service, a few non-members have chosen to pay a fee to get their cards. This service fee is set to rise considerably in 1991.

The Inwards QSL Bureau cost in 1990 around \$4000 (estimate at time of writing these notes).

In a survey of every 10,000 cards received by the bureau it has been found 53 per cent are for non-members.

Those cards still have to be sorted even though they won't be collected.

By their actions in soliciting cards the non-members are indirectly using the funds of members to the tune of around \$2000 a year.

An even more worrying aspect of this situation is the bad image they give all VK operators and the poor international goodwill caused by the unclaimed and not acknowledged cards.

WIA Victoria has received complaints from overseas about VK operators asking for a QSL via the bureau, but never sending a card in return.

No wonder — with more than half of the cards received at the Inwards Bureau being

unclaimed by non-members.

Under close review is the drain on members funds being spent on repeaters.

Well in excess of 50 per cent of all repeater users are not members of WIA Victoria.

The Victorian Technical Advisory Committee, through David Tilson VK3UR, is compiling a survey and evaluation of WIA repeaters.

Part of the evaluation process we expect to result in a rationalisation of the repeater network with some repeaters being financed by non-members.

The WIA is going into bat for the Amateur Radio Service in Australia at the World Administrative Radio Conference in 1992.

Once again the non-members seem prepared to enjoy the benefits without contributing.

By the time the WIA team heads off to the WARC in Spain, members of WIA Victoria will have contributed in excess of \$14,000 towards international representation.

The importance of WARC cannot be overstressed and the need for the WIA to continue playing its key role in international affairs is vital.

But one must question why the loyal WIA Victoria members must pay so dearly in supporting their hobby — while non-members just sit back and reap the benefits.

Since moving to a modern office in Ashburton two years ago staffed by a general manager we have examined a trend where

radio amateurs join WIA Victoria and then drop out after 12 months of membership.

We have found a large number of these drop-outs were those who came to us for help.

They join because they want assistance with legal problems involving interference or radio masts.

The drop-outs avail themselves of a particular service — then fail to renew their membership.

They join to be part of the WIA Victoria classes, obtain discount books, or borrow the TVI filter kits and — after having used us to overcome a problem, get a bargain or qualify for an amateur licence — they don't continue to support the organisation.

The drop-outs won't pay the \$42 a year it now costs to be a member of WIA Victoria.

When you speak to non-members ask them why they won't support the organisation that supports and protects their hobby.

VK4 NOTES

SALLY GRATTIDGE VK4MDG

Slow Morse in VK4

At the time of writing VK4 transmits official WIA Slow Morse sessions on two nights of the week, but hopefully by the time you read this there will be two more stations on the air. Considerable effort has been put into recruit-

Morseword No 46

	1	2	3	4	5	6	7	8	9	10	
1											Across
											1 Expectorate
											2 Section
											3 Gateau
											4 Soaked
											5 Boast
											6 Ten dollars
											7 Amazon monkey
											8 Grabs
											9 Paper
											10 Conceal
											Down
											1 Food
											2 Beers
											3 Correct
											4 Secure
											5 School periods
											6 Be dejected
											7 Hand
											8 Priest's robe
											9 — and downs
											10 Pass over

Audrey Ryan © 1990

Solution Page 56

ing more clubs or groups so that VK4 can present Slow Morse every night of the week, but three "silent nights" remain, so more volunteers are needed. If your club or CW net would like to make one of those nights yours, please contact the Slow Morse co-ordinator through the Townsville Amateur Radio Club, PO Box 964, Townsville 4810.

The timetable

Frequency 3535kHz
Time 0930 UTC. Note — some changes during Summer Time

Duration Approximately 30 minutes, with brief call-back following

Monday

Townsville Amateur Radio Club

VK4WIT 8.30pm local

Tuesday

Brisbane Amateur Radio Club VK4WIL

7.30pm local

*(starting date unknown)

Wednesday

Central Highlands Amateur Radio Club

VK4WCH 7.30pm local

Sunday

Sunshine Coast Amateur Radio Club

VK4WIS 7.30pm local

*(starting date unknown)

Support the advertisers
who support
Amateur Radio Magazine

5/8 WAVE

JENNIFER WARRINGTON VK5ANW

Examination Dates

The following are the proposed dates for examinations this year. Some changes may be necessary as the year progresses: 2 February, 27 April, 29 June, 31 August, 26 October.

They will be held at the Burley Griffin Building, 34 West Thebarton Rd, Thebarton. Contact Don McDonald VK5ADD.

Westfield Displays

Volunteers still required; please contact John McKellar VK5BJM.

Broadcast Officer

A volunteer is still required for the above position; please let Kevin VK5IV know if you can assist.

Relay Operators

I understand that there was no relay on one frequency recently. If we don't get more volunteers, this could become a regular occurrence; it might even be on your favourite band! Please let Chris VK5PN know if you can help.

Barossa Picnic

This will be held on Sunday, 24 March at 11am, at Mt Pleasant Oval. There will be all

the usual things, races, transformer tosses, fox-hunts etc. Plates of BBQ meats and salad will be available for sale. Also, if you are contemplating a shack clear out between now and then, you might like to sell some gear at one of the many tables which will be made available. Listen to the broadcast for further details.

Diary Dates

Please note: the meeting on 22 January will be a buy and sell starting at 6pm, and there will be no fifth Tuesday meeting this month.

This will mainly be a sale of disposals gear that we are lucky enough to have had donated. If, however, you would like to sell some personal gear, would you please ring Peter Maddern on 261 1433 to confirm that there will be space available.

A Humble 'Thank You'

It came as a great surprise to learn in the latter half of last year that Bill Wardrop and I had been nominated for Honorary Life Membership of the Division. I should say that my nomination was a surprise, as I felt that the 'portrait' had been my 'thanks'. I was not at all surprised at Bill's recognition; he was co-opted on to council 12 months before me, and is still there, well into his 12th year. It is a very great honour, in my case, being the first YL in the division makes it even more so; so I would like to say, from both of us, a very humble thank you. ar

QSLs FROM THE WIA COLLECTION (28)

KEN MATCHETT VK3TL HON CURATOR WIA QSL COLLECTION
PO Box 1 SEVILLE VIC 3139

The Boy Scouts Movement and Amateur Radio — Part I

It is not often that a world-wide movement is the result of the foresight and determination of one man. The concept of the Modern Olympic Games and its proposer, Baron Pi-

erre de Coubertin, is one example. (See "QSLs of the WIA Collection" in AR July and August 1990). Another is the founding of the Boy Scouts Movement by Baden Powell. "BP", as he is known by Scouts and Guides throughout the world, was born in London on 22 February

1857 as Robert Stephenson Smyth Powell. (The family's name was later changed to Baden-Powell). Son of an Oxford professor, he became a professional soldier serving in many theatres of war including India, Afghanistan and South Africa. It was his stubborn defence of Mafeking during the Boer War that made him a hero in the eyes of all Englishmen. It was his experience of scouting or reconnoitring during his war service that instilled the idea of scouting for boys. In fact, it is recorded that boys as well as the rest of the population

GREETINGS FROM BROWNSIA ISLAND,
POOLE HARBOUR, DORSET, ENGLAND
(Site of the First Experimental Scout Camp in 1997)



Where Scouts operating

GB3BSI

at the
1967 NATIONAL PATROL LEADERS' CAMP

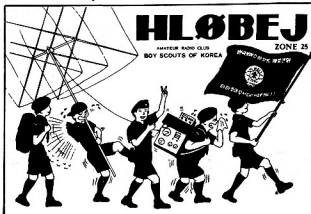
celebrate the occasion of

Scouting's Diamond Jubilee sixty years of friendship

THE XII WORLD JAMBOREE AT IDAHO, U.S.A.

and
THE 10th INTERNATIONAL JAMBOREE-ON-THE-AIR

THE AMATEUR PRESS, NEWCASTLE, ENGLAND



played an important role during the famous siege. It was scouting that led to the development of initiative and, above all, the ability to work with and help others. Baden-Powell returned to England but, before leaving South Africa, he had already written the book "Aids to Scouting" (in 1899) and found that this was being read by a considerable number of boys.

In early 1908 the famous book "Scouting for Boys" appeared. It was a book that galvanised the youth of the country into wishing to take part in activities. It was the undoubted success of the book, too, that changed BP's own life from that of a professional soldier to a leader of the Boy Scout Movement. The book emphasised "taking part" but still had a very patriotic flavour. In it we read "The history of the Empire has been made by British adventurers and explorers, the scouts of the nation ... It is also in the book that we find reference to the Scouts' motto "be prepared", an obvious link with Baden-Powell's wartime service.

GB3BSI

Baden-Powell decided to set up an experimental camp to see if his ideas were practical. The year was 1907 and the camp was held on Brownsea Island, a small island in the entrance of Poole Harbour in Devon. There were about 20 boys in the camp and the program extended over eight days. Activities included camp duties such as cooking, knots, sanitation, together with tracking, study of animals and plants, talks on chivalry and loyalty to the King. Also in the program were life-saving, first-aid, studies in colonial geography, "deeds that won the Empire", duties as a citizen and sport. A full account of the camp can be found in the book entitled "75 Years of Scouting" published by the Scout Association.

The QSL GB3BSI is one of the "special event" QSLs characterised by the GB prefix. (See "QSLs of the WIA Collection" in April 1988). This QSL was sent from a special station set up at the 1967 National Patrol Leaders' Camp held on Brownsea Island itself (hence the suffix BSI in the call). It celebrated Scouting's 60 years. Needless to say, the 1907 Scout camp was a great success, so much so

that BP engaged in more extensive operations that saw the Boy Scouts Movement become the great world-wide institution it now is. It is interesting to note that BP's sister, Agnes, was instrumental in establishing the Girl Guide Movement and that some years later, in 1930, his wife, Olave, became World Guide Leader.

AX2SWJ

The Scout Jamboree, an established event in the Scout calendar, is held every four years. The first one, held in August 1920 and originally planned to be held in 1918 to celebrate the 10th anniversary of the Movement, had to be postponed because of the War, but in 1920 it became a peace celebration. It was held indoors at Olympia, London, turf having to be brought to the area in order that the 8000 Scouts from 34 countries could pitch their tents. This first Jamboree was more of an exhibition and demonstration of handicrafts to visitors than the "get together" that characterised all future Jamborees.

The specially assigned prefix AX was issued to the Scout Association of Australia on the occasion of the World Scout Jamboree held at Cataract Scouts Park, Wollongong NSW in December 1987/January 1988. It was the first time that a World Scout Jamboree had been held in this country. Significantly, the callsign suffix stands for Scout World Jamboree.

K7BS/K7WSJ

The attractive QSL of K7BS (Boy Scouts)/K7WSJ (World Scout Jamboree) was sent from the 12th World Scout Jamboree conducted in Idaho, USA, in August 1967. This was a special event in Scouting since it marked the diamond jubilee of Scouting (1907-1967). Featured on the QSL card is the Scout emblem and Mt Borah, Idaho's highest mountain. About 13,000 Scouts from some 90 countries attended the Jamboree.

The formation of the Scouting Movement in USA has an interesting story. Mr William Boyce, an American businessman, was assisted (so the story goes) by a Boy Scout when,



in 1909, he lost his way in a London fog. So impressed was Boyce with the courtesy of the boy and his principle of "doing a good turn for someone every day" that he determined to get Scouting started in his own country. Only a year later the BSA (Boy Scouts of America) became incorporated to grow into an organisation which today has by far the greatest number of members (about five million) of any other country.

One result of the first Scout Jamboree of 1920 was the formation of an International Bureau. The "World Organisation of the Scout Movement" was established to assist national Scout organisations, and today consists of three bodies — a general assembly (a policy-making body), an executive body called the "World Scout Committee" and a secretariat, the "World Scout Bureau". The Bureau's head office is in Geneva, from which the amateur station HB9S operates. The WIA Collection has one of its QSLs sent during the 32nd JOTA (Jamboree on the Air) in 1989. Amongst its many functions, the Bureau helps in the organisation of the quadrennial World Jamborees.

WORLD JAMBOREE MONDIAL

AUSTRALIA 1987-88

TIME	FREQ	MODE	R	S	T
6 1 83 0600	7-100	SSB	5	5	5

TO **AX2SWJ**

AX2SWJ

UNIVERSITY OF WOLLONGONG

WOLLONGONG, AUSTRALIA

GB3BPH

JAMBOREE-ON-THE-AIR 1963

to **VK 3AH0**

Confirming our **14 291** MCS QSO

on **19 Oct 1963** at **1245** GMT

UR EST **5-8**

PSE QSL via **RSGB**

73ES

GOOD SCOUTING!

BADEN-POWELL HOUSE
Queen's Gate, South Kensington, London, SW7

Baden-Powell House is the realization of our Founder's often expressed hope that one day there would be a place in London where visiting Scouts from all over the World could stay at a reasonable cost in a happy Scout atmosphere.

HLOBEJ

The HLO prefix of Korea is assigned to universities, colleges and schools, in addition to a few institutions such as the Red Cross and the Boy Scouts. The attractive QSL HLOBEJ, showing a group of scouts on the march, comes from the Boy Scouts of Korea amateur radio station. On the reverse side of the card the operator points out that the World Scout Jamboree will be held in his country (at Seoul) in 1991. Scouting in Korea (and Japan) started as early as 1922.

GB3BPH

The specially assigned callsign GB3BPH on this QSL is dated October 1963 and stands for Baden-Powell House. It was sent to Bill VK3AHO (now VK4LC) from South Kensington, London. On the front of the QSL we read "Baden-Powell House is the realisation of our founder's often expressed hope that one day there would be a place in London where visiting Scouts from all over the world could stay at a reasonable cost in a happy Scout atmosphere." Baden-Powell House was opened by Her Majesty the Queen in July 1961, the QSL resulting from a QSO during the 1963 JOTA.

Next Month: The Boy Scouts Movement in Amateur Radio — Part 2.

Will You Play a Part?

If you would like to play a part in building up the WIA QSL collection and to save some thing for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated, but we especially need commemorative QSLs, special-event-station QSLs, especially assigned call QSLs (eg VK4RAN), pre-war QSLs, unusual prefixes, rare DX and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville 3139 or phone (059) 64 3721 for card pick-up or consignment arrangements for larger quantities of cards.

Thanks

The Wireless Institute of Australia would like to express its thanks to the following for their contribution of QSL cards towards the collection:

Brian	VK2MQ
George	VK3GI
Stan	VK3TE
Mavis	VK3KS
Ivor	VK3XB
Frank	VK2QL
Bill	VK6SW/VK9YV
Lindsay	VK3XI (ex VK3YN)
Bruce	VK3BM

Also the friends and families of the following "silent keys" (supplementary list).

Jim Ballinger	VK3NK
Frank Sullivan	VK3ZJ
Owen Rogers	G2HX (courtesy of Tom G3XMM)
George Shelley	VK2QS (courtesy of Nev VK2QF)
Jack Davis	A2DS (courtesy of Alex VK3BMS)

QSL Contributors' Ladder

Frank	VK2QL	177 points
Jim	VK9NS	172 points
Ivor	VK3XB	51 points
Ray	VK3RF	37 points
Austin	VK5WO	30 points
Bruce	VK3BM	13 points
Barry	VK5BS	12 points

Congratulations to that old timer, Frank VK2QL, and special thanks for his many generous contributions of valuable QSL cards to the WIA Collection. Frank does not enjoy the best of health and we wish him and his wife all the best in the future. Thanks to all those other contributors, especially to well-known DXer Jim, on Norfolk Island, for helping to build up the WIA QSL collection into one of the largest in the world and a most valuable source of material for amateur radio historians.

ar

CLUB CORNER

Gosford Field Day — 17 February 1991

The Gosford Field Day is a long-running annual event in the amateur radio calendar. The next field day will be held on Sunday, 17 February 1991 and this will be the 34th year of the event.

As usual the well-known suppliers of electronic equipment, components and books will be attending the next field day. These companies will have their latest products on display and for sale, and many will have items at special field-day prices.

The organiser, the Central Coast Amateur Radio Club, has kept the format of the day in line with the changing face of amateur radio. In recent years, seminars on a wide range of topical subjects have been a popular attraction. This year, an even bigger program of topical and interesting lectures and equipment displays has been arranged. Some attractions, however, have remained unchanged and ever popular, among these the sale of many thousands of new and used surplus equipment items known as "disposables", with many bargains going up for grabs.

Last year, for the first time, a popular "flea market" was arranged for those who want to sell their surplus equipment from trestles, their trailer or from the boot of their car. The organisers expect the flea market to catch on,

with even more vendors than last year.

For the past few years, more than 1000 people have attended the Gosford Field Day. The next one will be bigger than ever, so mark 17 February 1991 down in your plans to go to the Gosford Field Day.

Amateur radio operators, their families, friends and those interested in amateur radio are invited to attend the 1991 Gosford Field Day at the Gosford Showground. Gates open at 8.00am in wet or fine weather, with all displays under cover.

Field Day attractions include:

- Historical equipment display
- Disposals
- QSL Bureau
- Seminars
- Trade Displays
- Flea Market
- Television Equipment of Yesteryear display
- Packet Radio display
- Ladies' stall
- Complimentary tickets for Reptile Park and Bus Tour
- Video Theatre — Technical Presentation

Registration: Adults \$6.00, pensioners \$3.00, children (under 12) free. A special group concession is available on application.

Program:

0800 to 1300	Registration
0800 to 1700	Tea and coffee available in dining room
0930	Disposals booking-in closes (Dwyer Pavilion)
1000	Disposals open (entry southern end of Dwyer Pavilion)
1200	Bus tour departs
1200	Various seminars commence
1330	Drawing of raffle. Check at Information for winners.

A Field Day Information Service will be provided on the Gosford 2m repeater (6725) on Saturday afternoon and Sunday morning, using the callsign VK2AFY/P.

Trains: Sydney and Newcastle trains will be met by a courtesy bus, which will run between Gosford Railway Station and the showground between 8.00am and 10.30am. Return transport can be arranged at Information.

Parking: Plenty of off-street parking is available at the Showground.

Accommodation: Accommodation is usually scarce on the central coast at Field Day time, and early booking is advised.

Catering: Tea, coffee and biscuits available from 8.00am to 3.00pm at no charge in the dining room. Take-away food can also be purchased in the Showground.

Calls present: Bring your QSL cards for the "calls present" boards.

Equipment of Yesteryear Display: See equipment from a bygone era.

Exhibitors: Companies, persons, groups or clubs wishing to set up a trader's table or display at the Field Day should contact the Field Day Committee at PO Box 252, Gosford 2250, before 25 January 1991.

Disposals: Disposals forms and lot numbers can be obtained at the Showground on Saturday afternoon 16 February 1991. Items for disposals may be booked-in on Saturday 16 February between 2.00pm and 4.00pm, or on Sunday 17 February before 9.30am. Please note that 9.30am is the cut-off time for disposals booking-in, and late arrivals will be refused. Improperly tagged or catalogued items WILL be refused.

Flea Market: For those who wish to bypass disposals and sell their own equipment, trestles will be available in the flea market.

Information on group concessions, trade displays, flea market, disposals, programs or any other Field Day information can be obtained by writing to the Field Day Committee, Central Coast Amateur Radio Club Inc, PO Box 252, Gosford NSW 2250. AH phone (043) 92 2244.

BOB FITZGERALD VK2XRF PUBLICITY OFFICER

RAAF Williams Radio Club VK3APP

The RAAF radio club has been re-activated at Williams (Laverton) Air Force Base near Melbourne. There were previously two clubs, one of which was specifically for radio apprentices. Both these clubs had suffered periods of inactivity over the years as members had been posted out. The new club is expected to overcome this problem.

Recent administrative changes have enabled on-base clubs to accept members from outside the RAAF ranks.

It is now envisaged that the club will develop into a focus for amateur radio activity in the south-western suburbs of Melbourne, drawing members from the inner-western suburbs to as far afield as Melton and Lara.

Following the efforts of several working bees, we now have comfortable, well-appointed clubrooms with an operating room, a meeting

room, a storeroom, supper facilities and an outdoor BBQ area. Further extensions are planned. The club meets at 7.30pm on Friday evenings and holds a VHF net on Wednesday evenings at 8.00pm Melbourne time on 147.800MHz.

Many ex-service RAAF members will remember the call VK3APP from the early 1950s. It belonged to the RAAF radio apprentices radio club. In those days the club operated from the Froling training centre in Canterbury, Melbourne. There must be many amateurs now spread far and wide who were part of those early days of the club.

The new club at Laverton (now RAAF Williams) base is centred around the instructors and students at the radio school. The old VK3APP call has been kept current over the years, and the new club is now using that call sign.

Service postings may have taken many older members overseas. Perhaps you know of some through your DX working. Please let them know that the club is up and running again. We'd love to hear from them.

Look for VK3APP on HF/VHF on Friday evenings from 7.30pm (Melbourne time). Interested amateurs are invited to join in the club net on 147.8MHz on Wednesday evenings. Net controller is Len VK3DBO at Werribee. Len begins the call-in at 8.00pm sharp.

Give the club a call for old times sake. Maybe you were an operator from the Froling days. Make contact and renew old acquaintances. Newer members will appreciate hearing stories relating to the early days of the club.

Visitors and intending new members are always welcome, both on the net and at the club meetings. Club meetings alternate between technical, practical and informal natter nights, with a short formal general meeting once every month.

Contact the President, Mick Lindsay VK3ZMN BH (03) 368 2396, or Secretary, Don McCann VK2XDT/port-3 (pkt VK2XDT-3 @ VK3RPA), BH (03) 368 2265.

73, BILL MAGNUSON VK3JT @ VK3YZW VIC AUS OC PUBLICITY OFFICER

1991 Office Bearers Elected at Annual General Meeting

The Townsville Amateur Radio Club held its Annual General Meeting at the SES Green Street West End Headquarters on the evening of 13 November 1990. The following lucky people were elected as office bearers of TARC for 1991.

President	Peter Harding	VK4PVH
Vice President	Gavin Reibelt	VK4ZZ
Secretary	Wayne Amisano	VK4JCU
Treasurer	Ray Hinks	VK4LU
Editor	Iain Morrison	VK4KIG
WICEN		
Co-ordinator	Ian Sutton	VK4ZT
Slow Morse		
Co-ordinator	Sally Grattidge	VK4MDG
Station Manager	Gavin Reibelt	VK4ZZ
Activities Officer	Ian Sutton	VK4ZT
Publicity Officer	Gavin Reibelt	VK4ZZ
QSL Officer	Fred Raabe	VK4KWO
Officer Without Portfolio	Rob Mann	VK4WJ
Officer Without Portfolio	John Grott	

North Queensland Radio Convention 1991

The biennial NQ Radio Convention will be held in Townsville at the James Cook University Campus on 20, 21 and 22 September 1991.

This event, which has been hosted the previous nine times by the Townsville Amateur Radio Club, is extremely popular with those involved in radio and communications, with the event being a mixture of lectures, practical demonstrations, tours of the local area, and fun moments such as junk auctions and junk maiming contests.

It provides a chance for all those people who talk on radio to see what the people at the other end of the tenuous radio link really look like.

Events concerned with the convention will be advised at a later date. In the meantime, make a bold note of the dates, and start planning to roll up to one of the best radio conventions held in Australia.

GAVIN REBELT VK4ZZ SECRETARY TARC 1990 ar

COPIES OF ARTICLES

Photocopies of any article published in a back issue of AR available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears)

**AR ARTICLES
PO Box 300 Caulfield South Vic 3162**

VHF-UHF — an Expanding World

We apologise for the non-appearance of Eric's popular column this month. This is due to his sudden admission to hospital.

We wish Eric a speedy recovery.

INTRUDER WATCH

GORDON LOVEDAY VK4KAL
FEDERAL INTRUDER WATCH CO-ORDINATOR
FREEPOST NO 4 AG LOVEDAY RUBYVALE 4702

Summary October 1990

Freq	UTC	Date	Logs	EMN	ID	Comments
7002.2	1231	0710	3	A1A	V	
7005.1	1147	2710	2	J3E/U		Tic in Indo & Spanish
7020.3	1145	2710	1	A3E		Chin b/caster music
7080	1234	0810	2	A3E		Asian b/c poor modulation
14023.5	0400+	2310	78	F1B		24-hr station 250Hz shift
14048+	0800+	2810	68	J3E/both U/L		Radio telephone foreign
14051	0021	3110	2	J3E/L		Comm tic Indo language
14055	1000+	dly	30	A1A	RQ also	PKJ @ 1030z Viet press
14058+/-	0500+	2310	22	mmi		24 hrs Hellschreiber China
14065	2312	0210		F1B		RTTY 30Hz shift (aligns ???)
14075	1000+	mmi	44	A1A	VRQ	Viet press, text in English
VRQ also reported on 14035 and 14225 sending 5 hr code						
14220	0850	2309	25	A1A	QMH/B	Also F1B 1000Hz/75 same freq
14141	dly	dly	6	A1A	UMS	USR Naval Moscow
14217	1150	0710	4	F1B		RTTY idling 500Hz
18070	0852	1110		J3E/U		B/C Indian lang/???
21065	1137	1810		J3E/U		For b/c male voice c/sf poss
21070	1347	0710	2	F1B	KN1	450Hz shift
21031.5	mmi	mmi	73	F1B	UUMS	24 hrs on air USR
21156	mmi	mmi	17	A1A	CQ5	Vietnam/
21124	dly	dly	10+	A1A	VVH	250Hz shift
21283	dly	dly	46	A1A	UUUMS	URS
21347	0500+	2409	45	F1B		RTTY 250Hz .. 18 hrs on air
24950	1212	1110		A3E		B/C Chinese

28201 upwards is being plagued by illegal broadcast stations, both CB and commercial, also many pulse signals, including ionospheric sweepers with no means of identification.

My thanks to VKs 4BG, 4AKX, 4BHJ, 4BTW, 4BXC, 4CAS, 5GS, 5TL, 6RO, 6XW, 6BWI and 7RH. I hope VK3XR Ivor and VK2PS Steve have recovered from their recent illnesses by now.

The 10m band is still producing many broadcasting stations on the following frequencies: 28515 (8) 28550, 28575 (18) 8980 (17) 29600 wideband FM b/c. I have also noticed an increase of OTHR stations since the Gulf Crisis on 24.940, 28.202, 29.204 and 29.600MHz. Much more activity is being reported from all states concerning governments which do not believe in giving callsigns of any sort; the 20m band has the most of these intrusions. Regular reported frequencies often have a different callsign each time logged, eg 14055 may be heard as "LKJ" today and "PKJ" tomorrow! It is a hard fact that nothing much can be done until the DoTC Monitoring Service can get its act together, or some long-suffering amateur operator, prepared to wait for the elusive callsign that should trigger action. For the present, these frequencies do not appear in the list of printed intruders, but are kept by the co-ordinator for future needs. Many intrusions are of nuisance value to us, but are possibly used as jammers; here again, nothing can be done at the present time. VK, ZL and JA seem to log many common frequencies, but not always the same month or time and, to make it more frustrating, only once! It seems to be an open "go" with those operators looking only for a clear space (channel) to get their traffic through; regulations don't come into it. Quite possibly their countries don't have any.

This year sees the end of the Special Survey in March. I hope it will be worth the efforts of those participating. **73, Gordon ar**

OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION BUT MUST BE LESS THAN 200 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS

Need for Morse

I would like to suggest that the issue of a code exam be placed in the hands of amateur operators, with a voluntary vote on the matter.

This would save quite a lot of problems to persons concerned. You can understand why most persons seeking to gain their Certificate of Proficiency do not like taking the Morse exam, but they should understand that Morse Code is a specialist medium in communications.

That is what makes the AOCIP so very important to all amateur radio operators. My opinion is that if you abolish Morse or do away with the Morse exams, you will be lowering the present high standard of communications that exists in amateur radio today.

If also the theory exams are simplified it may allow in the people who just want to use amateur radio as a form of "foolishment" (sic).

As a keen observer of good quality Morse, in my opinion our country has some of the best and most-talented Morse operators in the

world. Quite a few have gained their talents because of the exam and also the training they have received from the Morse instructors in our own Division. So keep our high standard flag flying in amateur radio.

H C (BERT) HARMER VK5AUS
14 SCOTT STREET
SEPTON PARK 5083

Ultimate Automation?

Recently seen on "Quantum" was a program devoted to Stephen Hawking who communicated via a speech synthesiser. Hawking is the Lucasian Professor of Mathematics at Cambridge University. Also seen on a similar program was a voice-recognition computer.

Is it possible that a combination of these devices could be coupled to a transceiver, programmed to call CQ, DX or CQ contest, and another answer the call and log it?

NEIL PENFOLD VK6NE
2 MOSS CRT
KINGSLEY 6026

28MHz Pirates

Reference "Use it or lose it..." by Max Stark VK2CMS (AR November 1990, p9), I wish to state simply that the language spoken by these pirates is, in fact, Bahasa Indonesia. I speak only a few words of Bahasa Malaysia (which is very close) but I have asked my wife to listen with me to several stations, and she confirms my statement. My wife is Malaysian.

Secondly, I understand that the Indonesian authorities have been approached about the activity and have agreed that they have a problem. They say they are finding it difficult to police the bands due to the length of their archipelago, which is made up of thousands of islands. This information came to me via a council member of our WIA Division.

Finally, the comment that these pirates are using 40-channel AM CB sets seems a trifle odd, because channel 40 is 27.405MHz. But I do concede that they are using AM sets with channels spaced every 10kHz from 28.000 (probably lower, too) up to 29.000 and above.

Max, I think you did the right thing by bringing "our" problem to the printed page.

ALAN ROOCROFT VK5ZN
505A MILNE ROAD
RIDGEHAVEN 5097

Technical Cutback?

It disturbs and worries me to read in AR (November 1990) that its technical content may be scaled down. Are we to simply lie down and let this wash over us? I see no evidence that QST and Rad Comm have become any less technical in recent years. If anything, the quality and scope of their technical articles have been better than ever! Ours is primarily a technical avocation. Surely the WIA has a duty to publish material about those aspects of our hobby. Wherever possible, home construction and experimenting should be actively encouraged.

It may be argued that lots of elaborate equipment is necessary to get home-made equipment working properly — not so. The average amateur can build transmitters, receivers and many other items with just the usual hand-tools plus a multimeter and RF probe, dip oscillator, power supply and dummy load. Total cost, say \$300.

We presently have access to a significant slice of a valuable natural resource: the radio spectrum. All of us have proved by examination that we can be trusted to operate there with an acceptable degree of technical and operating competence. Therefore, any downgrading of our technical prowess must eventually lower our standards. Can we afford to let that happen?

DREW DIAMOND VK3XU
"NAR MEIAN" GATTERS RD
WONGA PARK 3115

Morse Code

Despite what CW enthusiasts may claim, many amateurs find the code very difficult to master.

If proficiency in CW is important, then surely the maintenance of that proficiency is equally important, so let's have regular re-examination in CW; failure resulting in loss of AOC privileges. (I wonder how many Full Calls would support this idea?)

Gone are the days when CW was an essential part of amateur radio; to require those with no aptitude for CW to achieve 10wpm in a one-off exam is ridiculous — to deny them access to the HF bands is selfish and discriminatory.

My advice to the CW enthusiasts is to lobby for CW to be made one of several optional topics for AOC — that would have the support of all amateurs. (Other topics could be packet, satellites, WICEN etc.)

Re "What Price a Life?" in December OTY — what a great argument for compulsory re-examination in CW, and Japanese and Equimaux and any other language one might receive a distress signal in.

Re "Pounding Brass" in December AR — VK3CQ has put up a full-page proposal in support of CW when those in opposition are restricted to 200 words in OTY. Incidentally, VK3CQ's survey does not allow for dissent so the results must be considered biased, and thus useless.

GRAHAM B JACKSON VK3TFN
PO BOX 39
UPPER BEACONSFIELD 3808

Fighting the Pirates

Peter McAdam should be commended for trying to rescue 10m from intruders (June AR, p20). It's also my favourite band. But I've been through the band-saving campaigns of the '70s and wondered why I bothered.

Remember 11m? The on and off-air abuse, car chases, representations to politicians... and the result? Those of us legitimately working 11m moved unceremoniously to 10, and who wants the same old arguments and time-wasting experiences again.

Like 11m, big business will win the battle for 10. One dealer's August flier has ads for a portable scanner, CB SWR meter and 10m amateur transceiver on adjacent pages — it doesn't even say you need a licence. History repeats.

What can WE do? We hear the WIA is being run now as a business. So let's fight big business with our business. That means we look at our resources (you and me), identify our strongest markets (band utilisation), and concentrate on maximising our profits (long-term survivability) for the Amateur Radio Corporation of Australia (our hobby).

As far as amateur bands are concerned, maintaining the status quo may no longer be our best option.

GARETH DAVEY VK2ANF
PO BOX 1387
DEE WHY 2099
at

SILENT KEYS

**DUE TO INCREASING SPACE DEMANDS OBITUARIES MUST BE
 NO LONGER THAN 200 WORDS**

We regret to announce the recent passing of:

Mr L B (Jock) Fisher	VK1LF
Mr J S MacNamara	VK2EQ
Mr J H Hill	VK2ADT
Mr Harry Jupp	VK2AJU
Mr Keith Trevenar	VK2AMG
Mr John C Bunn	VK2NDJ
Mr Max Muller	VK3LU
Mr Ron Schmidt	VK3LY
Mr Robert Anderson	VK3WY
Mr Bruce Fisher	VK3YRF
Mr I R Brown	VK4IB
Mr Lloyd Davies	VK5QI
Mr R N Wreford	VK5RW
Mr FW Clarke	VK6IO
Mr E J Stevens	VK6KXL

Roger Norman Wreford VK5 RW

On 23 September, Roger died from lymphoma, at the Hahndorf Nursing Home, in his 81st year.

Educated at The Leys School, Cambridge, England and at the Prince Alfred College, Adelaide, he was employed at the Bank of New South Wales until his retirement. From February 1942 until April 1946 Roger served as a signaller in the 13th Infantry Brigade, Signals Section (AIF) and was stationed for some time in New Britain.

He was first licensed as VK2ADC in September 1936, and was issued with his VK5 call a year later. Apart from amateur radio, he was interested in flying, and held an unrestricted private pilot licence from July 1965 until May 1976. Other hobbies included SCUBA diving, sailing, navigation, surveying and camping, and he constructed his first home in Brighton, SA.

By some mysterious (to me) means he was able to tell me that the base of my radio mast was 1853 feet above sea level, and I got the impression that, given a razor blade, a safety pin, a box of matches and a ball of string, Roger could fix anything.

Roger leaves a wife (Audrey), a son (John) and daughter (Rosind).

JOHN SCOUGALL VK5YY

Jack Hunter Hill VK2ADT

Jack was born near Muswellbrook on 31 July 1910 and was dux each year at Maitland High School, which won him a scholarship at Teachers' College and eventually Sydney University.

He married in 1933 and taught at Paramatta, Lismore, Canterbury and Homebush High Schools. Jack was also a navigator instructor at nights at the Catalina Rose Bay air base during the war. He later, as Maths Master, taught at Cessnock, Inverell and, finally, Port Macquarie High Schools, retiring there in 1971.

Jack became interested in radio at 13 years of age, and later held an amateur licence VK2ADT from 1936 until the present. He also won many DX awards around 1950, and acted as a link during the Maitland floods in 1949 and 1952. He also was a member of a net on 7124kHz for many years, until his health failed.

Lawn bowls was another of Jack's interests, being inaugural secretary of Inverell East BC, and he became that club's first Life Member, and later became President of Port Macquarie BC.

Jack passed away at Port Macquarie on 28 September 1990, and the amateur fraternity passes on condolences to his wife Rita and family.

ERN MARSTELLA VK2AEZ

Max Muller VK3LU

Max died on 6 October 1990 at the age of 86 years, eight months. He was my father and had held the callsign from 21 June 1947 under licence number 7397.

He had an abiding passion for wireless from an early age, and became involved with amateur radio in 1934 in his home state of South Australia.

Moving to Victoria in 1940, he continued with his hobby after the war years, and obtained his licence to operate an amateur station in 1947.

His later years were spent in ill health, and he spent more time turning the dial, rather than operating.

Another old-timer has passed on; however, I have assumed the callsign VK3LU to continue in the name, and have relinquished my callsign VK3BPP in so doing.

Although most of his mates have also passed on, there may be some who will be interested to learn of his passing. He is survived by a brother VK5VN, and a brother-in-law VK6VM.

JG MULLER VK3LU

J S (Jack) MacNamara VK2EQ

Jack passed away on Wednesday 14 November and his funeral was held at the Woronora Crematorium the following Friday.

Licensed in 1935, Jack was a very active amateur, and was frequently heard on the bands until a few days before his passing. One

of his interests was building electronic equipment, for both himself and others. Those who saw examples of his work will attest to its high quality.

By profession Jack was a musician and, for about 10 years, was a trombone player in the ABC Dance Band, frequently heard over 2BL and network stations.

In later years, and until his retirement, he was on the technical staff of the Chemical Engineering Department at Sydney University.

Jack, always a friendly and outgoing person, was ever willing to help any of his fellow amateurs.

He will be sadly missed by all who were privileged to know him.

BILL DUKES VK2WD

Harry Jupp VK2AJU

VK2AJU Harry Jupp was born in Newcastle (England) in 1902. His family migrated to Australia in 1912. The ship they travelled on was "lost at sea" for a time and delayed their arrival by a couple of months. The family settled in Victoria.

On leaving school, Harry was indentured into the pastrycook trade. He became an expert cook. He was married in 1925 and commenced a radio-servicing business with his brother in Reservoir Victoria. Harry moved to New Zealand in 1928 and worked as an engineer in a confectionery factory. He was licensed as

ZL4CJ in 1931, making all his own gear. He was active in branch meetings and contests.

Returning to VK in 1945, Harry started up a confectionery business. Licensed as VK3AJU, he was not very active until the early '60s, when he became involved with clubs in the district — FAMPARC, EMDRC & OLDTIMERS.

Harry built and equipped a 33ft cabin cruiser. This he used as a feature with a wedding reception centre at Cranbourne. He also operated a small printing works and produced many styles of QSL cards for his fellow amateurs.

Harry returned to ZL for a short period in 1974, and in 1980 retired to The Pocket (near Brunswick Heads). As VK2AJU he kept in touch with his friends for a few years. He joined the SARC and attended its meetings and functions when his health permitted. He was also a keen organist and a member of the local organ group. At the time of his death he was in the midst of converting a caravan into a mobile workshop.

Harry passed away peacefully in the Mullumbimby hospital on 9 September 1990.

GRAEME VIRTUE VK2GJ

Ron Schmidt VK3LY

My husband, Ron Schmidt, passed away on 25 October last. He was a radio ham for approximately 62 years — 1928-1990.

EILEEN SCHMIDT

SOME THINGS HAVE NO COMPARISON

amateur
radio
action

The magazine for the serious radio operator

AT YOUR NEWSAGENT EVERY MONTH

Amateur Radio Magazine Annual Index for 1990

Title of Article	Author	Issue Page			
**Administration					
54th Federal Convention Report		Jun 03			
Band Planning Issues	WIANEWS	Nov 03			
Changes to DoC 71	WIANEWS	Oct 03			
Draft Spectrum Plan	WIANEWS	Aug 03			
Federal Convention Reports		Apr 22			
Frequency Management Submission	WIANEWS	Nov 06			
Intruder Watch Survey	WIANEWS	Mar 05			
Management of the WIA Budget	WIANEWS	Dec 07			
Packet Networking Policies	WIANEWS	Jul 04			
Phone Patch Deregulation	Jim Linton VK3PC	Oct 05			
Repeater Linking	WIANEWS	Feb 04			
Repeater Linking Policies	WIANEWS	Jul 03			
Station Equipment Register		Feb 27			
Stolen Equipment Library		Feb 31			
WARC 92 Update	David Wardlaw VK3ADW	Apr 52			
WARC 92 Update	David Wardlaw VK3ADW	Oct 34			
WARC 92 Update	David Wardlaw VK3ADW	Jun 43			
WIA 80 Competition Details		Jan 38			
WIA and Jordan Activities	WIANEWS	Nov 04			
**Antennas, Towers, Lines, Etc					
160 M Helical Vertical	N Chivers VK2YO	Oct 4			
2ABQ and 3ABP — Fun (7) with a Simple Beam	Bill Rice VK3AB	Oct 11			
2-Wavelength Vertical for 435 MHz	Norman E Grathitt VK4ZPQ	Oct 20			
7.5 21 MHz Vertical		Jul 47			
A Ferrite Rod Loop for VLF	Lloyd Butler VK5BR	Nov 18			
A Few Tips on the Design of the Noise Bridge	Lloyd Butler VK5BR	Feb 06			
Antenna Array	Steve Mahoney VK5AIM	Oct 21			
ATTU in a Home Tn	Peter Parker VK6BWH	Nov 07			
Carolina Window	Random Radiators	Jan 26			
Coming up from Down Under on the Diamond Dilly	Don P Wood W7Y30/VK2D50	May 16			
Delta Loop for 80, 40, 20 and 10	Herb Under VK2UJ	Oct 23			
Extended Double Zepp	Random Radiators	Jul 41			
How to Wind that Non-Resonant Helical	Richard Burton VK6KXB	Oct 15			
Matching and Loading	Robert McGregor VK3XZ	Nov 22			
More on Baluns	Random Radiators	May 40			
More Views for ATV	Peter Jones VK4YAC	Oct 18			
My Antenna Farm	Brian Warman VK5BI	Mar 08			
Portable Botanical Curtains	Odus W Lowell W5VKG	Oct 16			
Receiving Loop Aerials for 1.8 MHz	Lloyd Butler VK5BR	Sep 10			
Tests on the Compact Coil Z Match	Lloyd Butler VK5BR	Dec 20			
The "Romyonymous" Z Match	Random Radiators	Mar 45			
The Importance of Low-Inductance Connections	Felix Soem VK4FVQ	Dec 14			
Trap Antennas		Jan 46			
VLF-JF and the Loop Aerial	Lloyd Butler VK5BR	Aug 12			
You Too Can Have a 1 to 1 SWR	Bill Roper VK3ARZ	Oct 19			
**Awards					
1989 Ron Wilkinson	WIANEWS	Mar 03			
British Postcode Award		Nov 31			
General Rules, WIA Awards (first of series)	Ken Gott VK3AJU	Feb 42			
Grid Square		Oct 28			
Linz Award		Oct 28			
New Awards Manager	WIANEWS	Jan 06			
New Belgian Award		Jan 45			
Postcode Club		Oct 26			
Radio Scouting		Oct 27			
Swedish Awards		Sep 32			
Technical, Shawsminth, Hogginsbotham		Feb 03			
Victory - 45		Mar 43			
VKI, VK2, VK3	WIANEWS	Mar 43			
WIA 80 Award		Jun 06			
WIA 80 Award		Jan 45			
**Book Reviews					
All About VHF Amateur Radio	Jim Linton VK3PC	Jun 27			
Amateur Bandplans Booklet	Jim Linton VK3PC	Aug 21			
Hints and Kinks for the Radio Amateur - ARRL	Jim Linton VK3PC	May 23			
Microwave & RF Designer's Catalogue	Ron Fisher VK3OM	Jul 13			
Morsum Magnificat	Alan Shawsminth VK4SS	Aug 21			
Official History, Australia, 1914-18 War,					
Royal Aust Navy	Rob Carmichael VK3DTR	Aug 45			
US Disposal Reference	Evans Jarman VK3ANI	Apr 36			
**Computers and Programs					
Commodore C64 Power Supply - Some Problems & Symptoms	Peter McAdam VK2EB	Nov 20			
Computers and Remembrance Day Contest 1990	Arn Wieringa VK7KR	Dec 18			
Further Note on Instant Track	Maurie Hooper VK5EA	Feb 46			
Instant Track 48hrs		Feb 04			
New Executive Office Computer		Feb 04			
OSL Card Generator	Ron Churcher VK7RN	Jul 17			
Six Digit Locator Finder	Contests	Dec 34			
**Contests					
14th WA Annual 3.5MHz Results		Dec 34			
14th West Australian Annual 3.5MHz CW & SSB Contests Results		Jul 23			
1990 Trial VHF/UHF Field Day Results		May 26			
ALARA 1990 Results		Aug 38			
Australian Springs 1990 Results		Dec 34			
Australian Springs 1990 Results		May 27			
Commonwealth Call Areas		Mar 42			
Commonwealth Contest 1989 Results		Jan 42			
Commonwealth Contest 1990 Results		Jan 44			
Jack Files Memorial Contest 1990 Results		Oct 31			
John Moyle Memorial Contest Results		Jun 30			
John Moyle Field Day 1990 Results		Aug 39			
John Moyle Field Day 1990 Results	Frank Beech VK7BC	Feb 40			
NCRG JMFDF 1989	John Sparkes VK6JX	May 24			
Remembrance Day 1990 Opening Address					
Remembrance Day Contest 1990 Rules					
Results of 1989 Remembrance Day					
Ross Hull Memorial Contest 1989 Results					
Rules of 1990 ARI Contest					
Scandinavian 1990 Rules					
Seasat World Wide DX Contest Rules					
The Contest					
USA Contest 1990 Rules					
VK Novice Contest 1990 Results					
VK Novice Contest 1990 Rules					
VK ZL-Oceania 1989 Results (Overseas Participants)					
VK ZL-Oceania 1989 Results (VK/ZL Participants)					
VK ZL-Oceania 1990					
**Digital Communications					
Digital Packets on Voice Repeaters in the					
Two-More Band					
Packet Mailbox Warning					
Stop the Packet Racket on HF!					
The TNC220+ Operating Factors and Modifications					
**EMC					
DL Cable TV Problems					
Do You Suffer From TII?					
VCR Interference Solutions					
**Equipment Reviews					
Kenwood TH-7SA Dual-Band Handheld Transceiver					
Kenwood TM-231A 2M FM Transceiver					
Kenwood TS-9050S					
More on the Yaesu FT-411					
The Bencher Iambic Paddle					
Yaesu FT-1000 HF All Mode Transceiver					
**History					
1990 New Zealand Celebrates					
Anzac Day 1990 - The Vital ZL Link					
Dunkirk and Battle of the 50th Anniversary					
Earthquake San Francisco and Amateur Radio					
George Jones VK6GM - Pioneer Radio Amateur					
Historical Collections					
Morse Recollections					
Mr Minto - Antarctic Bicentennial Expedition					
Newcastle Earthquake Disaster					
Pine Island Bicentennial 1790-1990					
The 75th Anniversary Anzac Radio Link					
The Last Wireless Anzac					
The Singapore Seasat of 1989					
What is History?					
Wireless in the 1914/18 War					
Wireless Museum Lindfield England					
**Miscellaneous Technical					
A Morse Oscillator					
A Shock Fall of Junk					
About Resistors					
Atlas 210/215 Keying Modifications					
Circuit for a Field Strength Indicator					
Experimental Communications in the LF Band					
Experiments on Webernet					
Health Hazards of Soldering					
Home Brew Double Paddle for Iambic Keyer					
Measurements on Large Electrolytic Capacitors					
Morse - The Phillips Code					
Morse Code Oscillator					
Novel Polarity Tester					
Recycled Connector Current Tester					
Synchro ATU					
Temperature Co-efficient Correction in Zener Diodes					
Temperature Drift in Zener Diodes					
The Filter That Was Not					
The Ladder Filter Revisited					
The New Challenge					
The RFM					
The Transistor as a Voltage Amplifier					
VNG's Code and the Leap Second					
We're Off Air!					
Weather Satellites Part 3					
**Operating					
2 Metre Amateur Scatter Tests in VK4					
24MHz DX 1989-88					
A Home Brew VHF Announcement					
ARRL DXCC Countries List					
Band Plans					
Broadcast Station Data					
Callign Suffices					
Draft Fox Hunt Rules					
DXpedition - Conway Reef					
DXpedition to St Peter & St Paul Rocks - PYOS, Brazil					
Hungarian DXpedition					
JOTA 1989 - North Solomons Province					
Not More of the Use It Or Lose It Syndrome!					
Standard Frequency Transmissions					
Synchro ATU					
Television Frequencies					
The Contest					
Thirty-Third JOTA					
Twenty-Five JOTA Badges that Otherwise Would Not Have Been					
Brig Keith Colwill CBE					
Sep 09					
Jul 22					
Mar 39					
May 26					
Nov 32					
Mar 39					
Sep 34					
Jan 31					
Jan 35					
Jan 41					
Oct 30					
May 26					
Sep 35					
Jul 25					
Sep 34					
**Digital Communications					
Digital Packets on Voice Repeaters in the					
Two-More Band					
Packet Mailbox Warning					
Stop the Packet Racket on HF!					
The TNC220+ Operating Factors and Modifications					
**EMC					
DL Cable TV Problems					
Do You Suffer From TII?					
VCR Interference Solutions					
**Equipment Reviews					
Kenwood TH-7SA Dual-Band Handheld Transceiver					
Kenwood TM-231A 2M FM Transceiver					
Kenwood TS-9050S					
More on the Yaesu FT-411					
The Bencher Iambic Paddle					
Yaesu FT-1000 HF All Mode Transceiver					
**History					
1990 New Zealand Celebrates					
Anzac Day 1990 - The Vital ZL Link					
Dunkirk and Battle of the 50th Anniversary					
Earthquake San Francisco and Amateur Radio					
George Jones VK6GM - Pioneer Radio Amateur					
Historical Collections					
Morse Recollections					
Mr Minto - Antarctic Bicentennial Expedition					
Newcastle Earthquake Disaster					
Pine Island Bicentennial 1790-1990					
The 75th Anniversary Anzac Radio Link					
The Last Wireless Anzac					
The Singapore Seasat of 1989					
What is History?					
Wireless in the 1914/18 War					
Wireless Museum Lindfield England					
**Miscellaneous Technical					
A Morse Oscillator					
A Shock Fall of Junk					
About Resistors					
Atlas 210/215 Keying Modifications					
Circuit for a Field Strength Indicator					
Experimental Communications in the LF Band					
Experiments on Webernet					
Health Hazards of Soldering					
Home Brew Double Paddle for Iambic Keyer					
Measurements on Large Electrolytic Capacitors					
Morse - The Phillips Code					
Morse Code Oscillator					
Novel Polarity Tester					
Recycled Connector Current Tester					
Synchro ATU					
Temperature Co-efficient Correction in Zener Diodes					
Temperature Drift in Zener Diodes					
The Filter That Was Not					
The Ladder Filter Revisited					
The New Challenge					
The RFM					
The Transistor as a Voltage Amplifier					
VNG's Code and the Leap Second					
We're Off Air!					
Weather Satellites Part 3					
**Operating					
2 Metre Amateur Scatter Tests in VK4					
24MHz DX 1989-88					
A Home Brew VHF Announcement					
ARRL DXCC Countries List					
Band Plans					
Broadcast Station Data					
Callign Suffices					
Draft Fox Hunt Rules					
DXpedition - Conway Reef					
DXpedition to St Peter & St Paul Rocks - PYOS, Brazil					
Hungarian DXpedition					
JOTA 1989 - North Solomons Province					
Not More of the Use It Or Lose It Syndrome!					
Standard Frequency Transmissions					
Synchro ATU					
Television Frequencies					
The Contest					
Thirty-Third JOTA					
Twenty-Five JOTA Badges that Otherwise Would Not Have Been					
Brig Keith Colwill CBE					
Sep 09					
Jul 22					
Mar 39					
May 26					
Nov 32					
Mar 39					
Sep 34					
Jan 31					
Jan 35					
Jan 41					
Oct 30					
May 26					
Sep 35					
Jul 25					
Sep 34					
**Digital Communications					
Digital Packets on Voice Repeaters in the					
Two-More Band					
Packet Mailbox Warning					
Stop the Packet Racket on HF!					

Use It Or Lose It
VHF, UHF & SHF Records
WNG - How to Use It

****People**
ALARA Membership List
Austin Henry VK3YL
Comsatnet Hooked on Amateur Radio
George Most VK6GM - Pioneer Radio Amateur
Harry Askinson VK6WZ - The Wizard of Words
Introducing the New Minister
Joel Beavers VK3JB
Joy - Profile of a Correspondent
Our Intruder Watch Co-ordinator (VK5KAL)
Profile of a Net Controller VK4CPA
Profile of Bing Keith R Colwell CBE
The Last Wireless Anzac
VK3CYA - George from Echuca

****Places**
A Japan Odyssey
Amateur Radio in Argentina
Amateur Radio in Thailand
Amateur Radio in the USSR - Part 1
Amateur Radio in the USSR - Part 2
Amateur Radio Long Vanuatu Todei
Bhutan - A5
DXpedition - Conway Reef
DXpedition to St Peter & St Paul Rocks -
Pyos, Brazil
Hungarian DXpedition
Land of the Hombil Welcomes Seaneat Amateurs
Mt Minto - Antarctic Bicentennial Expedition
Pitcairn Island Bicentennial 1790-1990
The Singapore Seafarer of 1989
Wireless Museum Lindfield England
Yeoval to Yeoval

****Power Supplies**
A 28-Volt Power Supply for Use with an
HF Linear Amplifier
Commodore C64 Power Supply - Some
Problems & Symptoms
****Propagation**
2-Metre Meteor Scatter Tests in VK4
24MHz DX 1982-89

****Receivers**
A Front-End Tuner for the VLF-LF Receiver
Bandwidth Control for the VLF-LF Receiver
Receiving Loop Aerials for 1.8MHz
Signal Strength, 5 Meters & Preamps
Superhet DC Receiver

****Regulations**
Changes to DOC 71
Crimes Act Amendment
New Canadian Amateur Licences
Novice Licences in Britain
Packet Mailbox Warning
Regulations Governing Amateur Stations in
Aust (DOC 71 & 72)

****Repeaters and Beacons**
10-Metre Beacons
14MHz Beacons
2-Metre Duplexers
E-Metre Beacons
ATV Repeaters
Beacons (Aust VHF/UHF)
Connections to Beacon and Repeater Database
Digital Packets on Voice Repeaters in the
Two-Metre Band
Duplex Repeaters
HF Beacons
Simplex Repeaters
Six-Metre Repeater VK3RMS
The TNC220+ Operating Factors and Modifications
VK & ZL Aeronautical Beacons

****Test Equipment**
1GHz Freq Counter Mods for 1296MHz &
2.4GHz Prescaler
A Few Tips on the Design of the Noise Bridge
A Microwave RF Power Meter
A Shack Full of Junk
A Simple Dip Meter
A Simple Inexpensive RF Bridge
Circuit for a Field Strength Indicator
Getting More From Your Oscilloscope
Level and Frequency on One Metre
Measurements on Large Electrolytic Capacitors

****Transceivers**
Atlas 210/215 Keying Modifications
Conversion of the Vinten MTR29 to Six Metres FM
Kenwood TH-7SA Dual Band Handheld
Transceiver (Review)
Kenwood TM-231A 2M FM Transceiver (Review)
Kenwood TS-950SD (Review)
Modifications to Dick Smith Explorer 430MHz
Transceiver
Yaesu FT-1000 HF All-Mode Transceiver (Review)

Max Stark VK2CMS
Quinton Foster

ALARA - VK6BX
Jim Linton VK3PC
Les Bradshaw VK6EB
John Hawkins VK6HQ
Jim Linton VK3PC
ALARA - VK2EBX
Mervyn Euston VK4SO
Stephen Pall VK2PS
Jim Linton VK3PC
Des Greenham VK3CO

Terry Robinson VK3DWZ
Marcelo Franco VK4DWALU6OWN
Jim Linton VK3PC
Yuri Zolotov UA3HR
Yuri Zolotov UA3HR
Jim Linton VK3PC
Stephen Pall VK2PS
Stephen Pall VK2PS
Natal DX Group
Stephen Pall VK2PS
Tom King VK2ATJ
Don Richards VK2BXMAVKOAT
Dr G O'Keefe KB6RL
David Rankin & Ken Pincott
Clive Wailes VK2DQE
Joy Collis VK2EBX

Brian Jones VK2BRD
Peter McAdam VK2EV8
John Roberts VK4TL
Graham Roberts VK6RO

Lloyd Butler VK5BR
Lloyd Butler VK5BR
Lloyd Butler VK5BR
Gordon MacDonald VK2ZAB
Drew Diamond VK3XU

WIANEWS
WIANEWS
WIANEWS
WIANEWS

Repeater Link
FTAC - VK3ZJC
Ian Milne VK7IR
WIANEWS
Ian Woodman VK3ZBI
John Drew VK5DJ

Chris Skeer VK5MC
Lloyd Butler VK5BR
Ron Cook VK3AFW
Ken England VK4JPE
Drew Diamond VK3XU
J A Gazard VK5JG
Try This
Ivan Huser VK5QJ
Ken Kimberley VK2PY
Reg Fookes VK2AKY

Allen Crewther VK3SM
Ian Keenan VK3AYK
Ron Fisher VK3OM
Ron Fisher VK3OM
Ron Fisher VK3OM
Allen Crewther VK3SM
Ron Fisher VK3OM

****Transmitters**
"Fonellor" SSB/CW Transmitter for 80 Metres
****WICEN**
Charleville Flood
Newcastle Earthquake Disaster
The Storm Watch Net
WICEN Nets and Frequencies
WICEN Victoria Inc

Drew Diamond VK3XU
VK4 Notes
Philip Greentree VK2IW
VK3 Notes

A Call to all Holders of a Novice Licence

Now you have joined the ranks of
amateur radio, why not extend
your activities?

The Wireless Institute of Australia
(N.S.W. Division) conducts a
Bridging Correspondence Course
for the AOCPE and LAOCPE Exami-
nations.

Throughout the Course, your papers
are checked and commented upon to
lead you to a successful conclusion.

For further details write to:

The Course Supervisor
WIA
PO Box 1066
Parramatta NSW 2124
(109 Wigram Street, Parramatta)
Phone: (02) 689 2417

11am to 2pm Monday to Friday
7 to 9pm Wednesday

HF PREDICTIONS

ROGER HARRISON VK2ZTB
THE APOGEE GROUP

January Charts

For ease of use and to accommodate space restrictions in the magazine, I have provided predictions applicable for three major regions of Australia:

VK EAST. Covers the major part of NSW and Queensland.

VK SOUTH. Covers southern NSW, VK3, VK5 and VK7.

VK WEST. Covers the south-west of Western Australia.

For each of these regions I have selected six "terminals" to major continental regions of the world. To Europe, long path predictions are given in lieu of the short path, as the former is open at more reasonable hours.

The charts explained

These charts are different to those you see published elsewhere, and arguably more useful to the amateur fraternity as they give, effectively, the predicted signal/noise ratio for each hour and for selected bands.

The charts are organised in 24 rows, one for each hour UTC (first column on the left). Don't forget to add the appropriate number of hours for your time zone, including daylight saving where it applies. The next column gives the MUF (maximum usable frequency) for each hour, followed by the field strength at the MUF, in decibels referred to 1 uV/metre (dBu). The column marked FOT gives the "optimum" frequency - the most reliable frequency for the path.

Then come five columns, one for each of five selected HF bands. The numbers in the column represent predicted field strength at each hour in decibels referred to 1 uV/metre. Here it represents "raw" signal to noise ratio as urban noise levels are typically 1-2 uV/metre, but does not take into account the advantage offered by particular transmission modes. The results are based on a transmitter power of 100 W output (except where noted later), the use of modest 3-element beams or similar, and for "median" conditions. Where

the results fall below -40 dB, no output is printed.

Enhanced conditions may improve S/N ratios by 9-15 dB. The use of CW or digital transmission modes show better results than SSB. If you've got 400 W output, you get a 6 dB improvement. Where conditions warrant it, I have included predictions for the bands below 14 MHz, deleting the upper bands.

Ten Metres

The predictions look a little pessimistic for ten metres, but it only takes a slight "lift" in conditions to provide openings on this band. Keep a watch on the short-term geomagnetic and propagation forecasts.

Broadcasts

The VK2WI and VK3BWI Sunday broadcasts carry propagation predictions; for the bands 14 MHz and above listen on the last Sunday of the month for the month ahead, and for the bands 1.8 to 10 MHz, listen on the first Sunday of the month for that month. Often, special predictions covering current or upcoming DXpeditions will be included, so keep a listen out.

UTC	MUF	DBU	FOT	14.2	18.1	21.2	24.9	28.5
1 12.6	-23	9.6	-18	-14	-28	-27	-40	
2 10.8	-38	8.2	-20	-16	-21	-30	...	
3 10.3	...	7.9	-26	-21	-25	-34	...	
4 13.6	-33	10.5	-29	-17	-16	-20	-28	
5 19.1	-17	15.1	...	-21	-15	-13	-15	
6 26.0	-9	19.9	...	-26	-15	-10	-9	
7 28.2	-6	23.0	...	-27	-15	-8	-6	
8 27.5	-5	22.3	...	-25	-14	-7	-5	
9 24.7	-4	21.6	...	-20	-10	...	...
10 25.7	-1	20.7	-32	-12	-4	-1	-2	
11 24.8	2	19.9	-16	-3	2	2	0	
12 24.0	6	19.2	-2	6	7	5	2	
13 23.8	10	18.9	11	14	12	9	4	
14 23.4	13	18.5	21	20	16	11	4	
15 22.9	15	18.0	24	21	17	11	4	
16 21.7	15	17.0	25	21	16	9	1	
17 20.4	16	16.0	25	20	15	7	-2	
18 19.4	16	14.9	25	19	12	4	-7	
19 18.8	16	14.3	24	18	11	1	-9	
20 19.2	12	14.4	22	15	7	-3	-15	
21 17.8	9	13.3	14	8	2	-9	-22	
22 16.7	4	12.3	5	2	-4	-14	-27	
23 15.6	-2	11.6	-3	-4	-9	-19	-31	
24 14.4	-11	10.8	-11	-9	-13	-23	-35	

UTC	MUF	DBU	FOT	14.2	18.1	21.2	24.9	28.5
1 13.9	-15	10.5	-14	-11	-15	-24	-37	
2 11.6	-30	8.9	-19	-16	-20	-30	...	
3 11.0	-40	8.5	-21	-17	-20	-29	...	
4 14.4	-28	11.3	-20	-17	-16	-19	-26	
5 21.2	-15	14.4	...	-22	-15	-12	-14	
6 24.5	-9	20.8	...	-28	-16	-10	-8	
7 25.2	-10	20.5	...	-29	-17	-10	-8	
8 24.8	-10	20.2	...	-28	-16	-10	-8	
9 24.5	-9	19.9	...	-25	-15	-9	-8	
10 23.8	-8	19.2	...	-20	-11	-7	-7	
11 22.8	-5	18.3	-31	-12	-7	-5	-7	
12 21.7	-1	17.4	-16	-4	-2	-3	...	
13 20.5	4	16.3	-1	4	9	-1	-8	
14 19.7	10	15.7	13	12	7	0	-9	
15 18.9	12	15.0	18	14	8	-1	-12	
16 18.3	13	14.4	20	14	7	-3	-14	
17 17.6	14	13.7	20	13	6	-5	-18	
18 16.8	15	13.0	20	12	3	-9	-22	
19 16.2	15	12.3	19	10	1	-12	-26	
20 16.2	15	12.2	19	10	1	-12	-26	
21 17.0	12	12.7	16	10	3	-8	-21	
22 18.9	7	14.0	10	8	3	-6	-16	
23 17.6	2	13.2	2	1	-3	-12	-23	
24 16.0	-5	12.0	-7	-5	-9	-18	-29	

UTC	MUF	DBU	FOT	14.2	18.1	21.2	24.9	28.5
1 14.4	-5	10.9	-5	-8	-15	-27	...	
2 12.0	-19	9.2	-14	-16	-24	-37	...	
3 11.3	-30	8.7	-19	-18	-24	-34	...	
4 15.0	-21	11.7	-25	-16	-16	-21	-20	
5 9.8	-11	10.9	-36	-17	-10	-10	-13	
6 28.9	-5	22.2	...	-21	-12	-6	-5	
7 28.4	-4	23.1	...	-24	-13	-6	-4	
8 28.1	-5	22.7	...	-24	-12	-7	-5	
9 27.5	-5	22.5	...	-22	-12	-6	-5	
10 26.9	-4	21.9	...	-19	-10	-5	-4	
11 26.1	-3	21.7	-34	-14	-6	-3	...	
12 25.1	1	20.2	-19	-4	0	1	-1	
13 24.2	5	19.4	-1	6	7	5	0	
14 23.3	10	18.6	15	15	13	8	1	
15 22.0	12	18.3	22	19	15	9	2	
16 22.5	13	17.8	24	20	15	9	1	
17 22.0	14	17.8	25	20	15	8	0	
18 22.1	14	16.4	25	20	14	6	-3	
19 20.0	15	15.5	24	18	12	3	...	
20 18.9	15	14.5	23	16	9	0	-12	
21 18.5	15	13.4	23	16	8	-2	-13	
22 19.1	13	14.4	22	15	8	-3	-14	
23 18.3	8	13.6	15	9	1	-9	-22	
24 16.5	3	12.4	5	1	-6	-17	-31	

VK EAST - MEDITERRANEAN

UTC	MUF	DBU	FOT	14.2	18.1	21.2	24.9	28.5
1 10.5	-39	7.9	-19	-16	-19	-28	...	
2 10.7	-33	8.1	-17	-16	-20	-31	...	
3 10.7	-29	8.2	-16	-17	-22	-33	...	
4 10.0	-28	7.8	-14	-17	-25	-40	...	
5 9.1	-25	7.1	-13	-21	-23	...	...
6 9.0	-16	7.1	-12	-24	-38	...	...
7 11.0	-2	8.8	-4	-15	-28	...	...
8 14.9	8	11.9	9	1	-9	-22	-38	
9 17.5	7	14.3	13	4	-6	-19	-34	
10 18.9	2	14.3	3	2	1	-3	-10	
11 20.0	-6	15.9	-20	-8	-5	-6	-10	
12 19.2	-13	15.2	-33	-16	-11	-10	-13	
13 19.5	-20	15.0	-35	-24	-12	-14	...	
14 17.7	-25	13.8	...	-24	-14	-15	-15	
15 16.9	-30	13.0	...	-25	-18	-15	-16	
16 16.1	-34	12.3	...	-25	-18	-15	-17	
17 15.1	-34	12.2	...	-25	-18	-15	-17	
18 16.9	-31	12.4	...	-26	-18	-15	-16	
19 18.9	-25	14.9	...	-28	-19	-14	-14	
20 19.7	-25	13.5	...	-24	-17	-15	-17	
21 19.1	-31	11.7	...	-26	-18	-15	-17	
22 12.9	-37	9.9	-17	-16	-19	-25	...	
23 11.5	...	8.8	-28	-19	-20	-25	-35	
24 10.6	...	8.6	-23	-18	-21	-29	-40	

VK STH - MEDITERRANEAN

UTC	MUF	DBU	FOT	14.2	18.1	21.2	24.9	28.5
1 10.3	...	7.8	-23	-20	-25	-36	...	
2 10.5	-33	8.1	-17	-16	-22	-32	...	
3 10.5	-28	8.1	-15	-17	-24	-37	...	
4 9.9	-26	7.7	-14	-19	-28	...	...
5 9.0	-25	7.0	-14	-24	-37	...	...
6 8.8	-18	6.9	-14	-28	...	...	...
7 10.4	-5	8.3	-8	-20	-35	...	...
8 13.4	4	10.9	3	-7	-17	-32	...	
9 17.3	7	14.3	13	6	-9	-22	...	
10 19.0	8	12.5	10	9	5	-10	...	
11 17.3	1	12.8	-1	1	-2	-8	-17	
12 17.5	-7	12.1	-14	-6	-10	-17	...	
13 16.9	-16	11.8	-28	-14	-11	-13	-18	
14 16.1	-24	11.2	-34	-18	-14	-14	-19	
15 15.4	-31	10.7	-38	-21	-16	-15	-19	
16 14.9	-35	10.4	-40	-21	-16	-15	-19	
17 15.4	-36	10.5	-40	-21	-16	-15	-19	
18 15.7	-34	11.1	...	-24	-17	-15	-18	
19 17.3	-29	11.9	...	-26	-18	-15	-16	
20 16.8	-28	13.2	...	-23	-17	-15	-18	
21 16.2	-25	11.1	...	-25	-17	-12	-27	
22 12.2	...	9.5	...	-31	-29	-34	...	
23 11.1	...	8.5	...	-32	-30	...	...
24 10.3	...	7.9	...	-35	-29	-33	...	

VK WEST - MEDITERRANEAN

UTC	MUF	DBU	FOT	14.2	18.1	21.2	24.9	28.5
1 10.1	...	7.8	...	-39	...	...	...
2 10.4	...	8.0	-34	-28	-31	...	...
3 10.4	...	8.1	-22	-19	-24	-33	...	
4 9.8	...	7.6	-19	-19	-25	-36	...	
5 8.8	...	7.0	-18	-21	-30	...	...
6 8.6	...	6.8	-18	-24	-34	...	...
7 10.1	-23	8.0	-15	-21	-31	...	...
8 13.0	-10	10.4	-9	-13	-20	-33	...	
9 17.0	-2	13.3	-1	-3	-8	-18	-27	
10 19.1	2	16.3	4	5	1	-5	-13	
11 17.8	2	13.7	2	2	-2	-8	-17	
12 16.8	-5	12.9	-9	-5	-7	-13	-21	
13 17.7	-11	14.8	-22	-11	-13	-18	...	
14 17.5	-20	13.9	-33	-18	-14	-15	-18	
15 16.8	-27	13.6	...	-23	-17	-16	-19	
16 16.2	-32	12.6	...	-25	-19	-17	-20	
17 15.4	-37	11.9	...	-25	-19	-16	-19	
18 14.9	-39	11.3	...	-25	-19	-18	-21	
19 14.9	-40	11.2	...	-25	-19	-18	-20	
20 15.7	-36	11.7	...	-26	-19	-18	-20	
21 15.1	-33	11.1	...	-25	-19	-17	-20	
22 11.9	...	9.3	...	...	...	...	...
23 10.8	...	8.4	...	...	...	...	...
24 10.2	...	7.8	...	...	...	...	...

VK EAST - EUROPE L.P.

VK STH - EUROPE L.P.

VK WEST - EUROPE L.P.

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	17.6	-9	12.3	-17	-8	-8	-12	-18
2	19.7	-8	14.1	-24	-10	-7	-8	-13
3	19.8	-11	15.0	-32	-15	-9	-9	-12
4	22.1	-10	16.1	-31	-14	-9	-7	-12
5	24.0	-9	14.8	...	-21	-13	-9	-9
6	24.4	-9	17.1	...	-22	-14	-9	-9
7	24.1	-10	16.9	...	-22	-14	-9	-9
8	24.1	-9	16.1	...	-21	-13	-9	-9
9	22.8	-8	16.6	-18	-11	-8	-8	-10
10	22.8	-7	16.5	-33	-14	-8	-7	-8
11	21.7	-6	16.4	-25	-10	-6	-6	-9
12	20.5	-5	15.1	-17	-6	-5	-5	-10
13	18.8	-4	15.7	-9	-1	-5	-11	-11
14	19.0	3	15.0	0	3	1	-5	-13
15	18.3	8	14.3	10	8	4	-4	-14
16	17.6	12	13.5	16	11	5	-5	-17
17	16.7	13	12.8	18	13	8	-3	-18
18	16.1	14	12.2	18	10	1	-11	-25
19	16.1	15	11.6	19	10	2	-11	-25
20	16.4	14	11.2	18	10	1	-10	-25
21	15.7	9	11.0	9	4	-3	-15	-28
22	15.2	2	10.5	2	-1	-7	-17	-30
23	15.1	-4	10.5	-6	-4	-9	-17	-29
24	15.9	-8	11.1	-21	-6	-8	-15	-24

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	16.8	-6	11.6	-6	-11	-6	-14	-23
2	19.0	-6	13.5	-16	-7	-6	-9	-14
3	19.0	-9	14.4	-24	-11	-8	-9	-14
4	21.1	-8	15.7	-31	-15	-7	-9	-14
5	21.8	-10	15.5	-37	-17	-11	-9	-11
6	21.8	-11	15.5	-38	-18	-12	-10	-12
7	21.8	-12	15.4	-39	-19	-12	-10	-12
8	21.8	-11	15.4	-38	-18	-11	-9	-11
9	21.4	-11	15.3	-36	-17	-11	-10	-12
10	20.6	-10	14.5	-30	-14	-10	-10	-13
11	19.4	-10	13.6	-24	-11	-9	-10	-15
12	18.8	-9	13.2	-18	-8	-8	-9	-16
13	17.4	-5	12.1	-10	-5	-6	-12	-21
14	16.6	-2	11.5	-4	-2	-6	-14	-25
15	15.8	4	11.2	5	1	-5	-16	-29
16	15.1	11	10.6	13	5	-9	-18	-34
17	14.6	13	10.2	14	3	-7	-23	-40
18	14.3	14	10.0	14	3	-9	-25	...
19	14.3	14	10.1	15	3	-8	-25	...
20	14.0	10	9.7	10	-5	-15	-26	...
21	14.9	9	10.4	10	2	-7	-21	-37
22	14.5	3	10.1	3	-2	-10	-23	-38
23	14.5	-1	10.2	-1	-4	-11	-22	-37
24	15.2	-5	10.8	-6	-5	-10	-19	-31

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	18.2	3	13.7	2	4	0	-6	-15
2	20.0	2	15.2	-4	2	1	-3	-9
3	22.3	0	17.5	-14	-3	0	-1	-5
4	20.8	0	16.0	-20	-8	-1	-2	-12
5	26.2	-2	19.4	-30	-11	-5	-2	-3
6	26.1	-3	21.4	-33	-13	-6	-3	-4
7	25.6	-4	20.9	-35	-15	-7	-4	-5
8	25.6	-5	20.9	-35	-15	-7	-4	-5
9	25.0	-5	20.3	-33	-14	-7	-5	-6
10	24.6	-4	20.0	-30	-12	-6	-4	-6
11	24.4	-3	19.7	-24	-8	-4	-3	-6
12	23.7	-2	19.4	-17	-5	-3	-2	-7
13	23.8	2	17.5	-6	2	2	-1	-7
14	20.6	5	16.5	3	6	4	-1	-9
15	19.9	9	15.8	13	11	7	0	-10
16	19.1	13	15.1	21	18	13	1	-12
17	18.5	13	14.9	20	14	7	-3	-15
18	17.8	14	13.9	21	14	6	-5	-18
19	17.0	15	13.1	21	12	4	-8	-22
20	16.3	16	12.5	21	11	3	-10	-25
21	16.3	16	12.3	20	11	2	-11	-25
22	17.2	15	12.8	21	13	7	-7	-21
23	17.5	12	13.4	16	11	4	-6	-28
24	17.4	8	13.2	9	7	1	-7	-18

VK EAST - AFRICA

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	26.2	2	21.5	-17	-3	2	2	0
2	26.9	2	20.3	-19	-4	1	3	1
3	27.3	2	22.6	-20	-4	1	3	1
4	27.0	2	22.3	-19	-3	2	3	1
5	24.6	2	21.9	-9	3	1	-1	-3
6	26.0	3	21.3	-12	1	4	4	1
7	25.2	4	20.5	-5	4	6	5	1
8	24.5	7	20.4	6	10	7	7	1
9	23.7	11	19.2	18	14	9	1	1
10	23.0	12	16.5	22	19	15	8	0
11	22.5	13	16.0	24	20	15	7	-1
12	22.5	13	17.9	26	21	16	8	-1
13	22.2	14	17.4	28	22	16	9	-1
14	21.7	14	17.6	28	22	15	6	-4
15	20.4	14	16.0	26	19	12	2	-9
16	19.2	14	15.0	25	17	9	-2	-15
17	18.0	14	13.9	23	14	3	-1	-24
18	17.1	14	12.5	21	11	1	-13	-29
19	16.2	11	13.2	17	5	-7	-24	-31
20	14.9	10	11.6	12	-1	-15	-24	...
21	16.2	5	13.8	-6	-1	-13	-24	...
22	24.8	5	19.4	4	9	8	5	-3
23	25.5	4	20.2	-6	4	6	5	1
24	25.6	2	20.6	-13	0	3	3	0

VK STH - AFRICA

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	26.3	0	21.0	-22	-6	-1	1	-1
2	26.7	0	21.7	-25	-7	-1	0	-1
3	26.7	0	22.1	-26	-8	-2	0	-1
4	26.7	0	22.0	-26	-8	-2	0	-1
5	21.4	0	19.4	-3	3	-1	1	-1
6	25.7	1	21.1	-18	-4	0	1	-1
7	25.2	2	20.5	-12	0	3	2	-1
8	24.6	4	20.0	-5	5	6	4	-1
9	23.7	10	19.1	16	13	1	1	6
10	22.8	11	18.4	22	19	14	7	-1
11	21.9	12	17.6	24	19	13	5	-4
12	20.9	12	16.7	24	18	12	2	-8
13	20.5	13	16.3	23	18	11	2	-8
14	19.9	13	15.8	25	17	10	-1	-13
15	19.4	13	15.3	24	16	8	-3	-16
16	18.6	13	14.5	23	14	5	-5	-21
17	17.9	13	13.7	21	12	3	-7	-26
18	16.8	13	12.9	19	9	-2	-16	-33
19	16.6	13	12.7	19	8	-3	-18	-35
20	16.1	10	12.5	15	3	-9	-26	...
21	14.5	6	14.5	-5	1	-13	-24	...
22	22.4	4	17.0	2	6	5	1	-6
23	24.9	2	19.2	-10	1	3	2	-1
24	26.1	1	20.5	-17	-3	1	2	-1

VK WEST - AFRICA

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	24.6	2	19.4	-12	0	2	2	-2
2	24.7	1	19.8	-16	-3	1	1	-3
3	25.1	1	20.5	-19	-4	0	1	-2
4	25.4	1	19.2	-19	-4	0	1	-2
5	25.4	1	20.0	-18	-3	1	1	-2
6	25.2	1	20.8	-16	-2	2	2	-1
7	24.9	2	20.4	-12	0	3	2	-1
8	24.4	4	19.9	-5	4	5	3	-1
9	23.7	9	18.9	16	13	9	1	6
10	23.0	11	19.1	20	18	14	8	0
11	22.2	13	17.9	24	20	15	7	-3
12	21.5	13	17.2	25	20	14	5	-5
13	20.6	14	16.6	26	20	13	4	-6
14	20.4	14	16.4	26	19	12	2	-9
15	20.2	14	16.1	26	19	11	1	-11
16	19.8	14	16.1	26	18	10	-1	-13
17	19.2	13	15.8	24	17	9	-2	-17
18	17.8	13	13.9	22	13	9	-10	-26
19	16.8	13	13.0	20	9	-2	-17	-34
20	16.1	10	12.4	16	3	-10	-28	...
21	14.5	6	14.5	-5	1	-13	-24	...
22	22.8	7	14.1	15	7	-2	-15	-30
23	24.4	4	16.4	2	6	4	-1	-8
24	23.7	3	18.5	-6	3	4	2	-3

VK EAST - ASIA

UTC	MUF	DFU	FOF	14.2	18.1	21.2	24.9	28.5
1	22.7	12	17.0	6	12	13	10	4
2	22.8	12	18.8	6	13	13	10	4
3	22.3	12	18.4	6	13	13	10	4
4	22.0	13	18.0	10	14	14	10	3
5	21.5	14	17.5	13	16	15	10	3
6	20.9	16	17.0	18	19	16	10	2
7	20.3	20	16.8	25	22	18	10	1
8	19.4	22	16.7	29	24	18	9	-1
9	18.7	23	15.1	30	24	17	7	-4
10	18.0	23	14.4	30	23	16	5	-7
11	17.7	24	14.1	32	23	15	4	-8
12	17.2	24	13.7	30	22	14	2	-10
13	16.7	24	13.6	30	21	12	0	-13
14	15.9	25	12.4	28	19	9	-4	-18
15	15.1	25	11.7	27	16	6	-8	-23
16	14.2	25	11.0	25	14	2	-12	-29
17	13.9	25	10.6	24	12	0	-15	-32
18	13.2	22	10.8	22	12	1	-13	-38
19	15.9	16	12.2	17	13	5	-6	-18
20	18.4	14	14.1	13	14	10	2	-7
21	20.6	13	15.5	11	14	12	0	-2
22	21.5	12	17.0	9	13	13	8	2
23	21.9	12	17.5	6	12	13	8	2
24	22.4	12	17.6	6	12	12	9	3

TRADE HAMADS

TRADE HAMADS

● **WEATHER FAX** programs for IBM XT/AT's & "RADFAX" is a high resolution, shortwave weather fax, morse & RTTY receiving program. Needs QXA, SSBH radio & RADFAX decoder. Also "RF2HERC", "RF2EGA" & "RF2VGA", same as RADFAX2 but suitable for Hercules, EGA, & VGA cards respectively. \$35 *** "SATFAX" is a NOAA, Meteor & GMS weather satellite picture receiving program. Uses EGA or VGA mode. Needs EGA or VGA color monitor and card, & "WEATHER FAX" PC card. \$45 *** All programs are on 5.25" or 3.5" disks (state which) + documentation, add \$3 postage. ONLY from M. Delahanty, 42 Wilkes St, New Farm 4005 QLD. Ph (07) 358 2785.

● **AMIDON FERROMAGNETIC CORES:** for all transmitter and receiver applications. Send DL size SASE for data/price to RJ & US Imports, Box 157, Montdale NSW 2223 (no enquiries at office please ... 11 Mackinnon St, Oakley). Agencies at: Geoff Wood Electronics, Sydney, Webb Electronics, Albany, Electronic Components, ACT, Tascon's Electronics, Melbourne, S.Williams, Perth, Assoc TV Service, Hobart.

● **ANNUAL SALE** of new and used equipment. Best ever prices. USED
FT901D HF TRANSCEIVER, \$685. In PC. Has been air tested for 2 weeks. With mic.
PL 2000B LINEAR HF Amplifier, \$695. Bench and air tested. Above specs.
FT 200 HF TRANSCEIVER, \$299. With power supply. In mint cond.

IC 720A HF TRANSCEIVER, \$845. General coverage receive. Twin VFOs. PC.
UNIDEN UCB 70XLT Scanner, \$150. With charger. GC. New price \$265.
CHALLENGER BL200 Mk11 Scanner, \$290. With charger, as new.
CODAN HF Transceiver 7727C. 4 - RFDS frequency. PC. \$1500.

COCAAN HF 8525 Transceiver, \$2750. Remote control, 99 channels, complete with twin auto tune antennas. Used only for demo. As new.
WEATHER FAX Naximate 12V \$800. Demo model. New \$2000. RTTY as well.
YAESU 229R 2m all mode, \$390. Complete in box.
YAESU 227R HF Transceiver, \$275. 2m FM 10W. GC. Manual. ICOM IC 730 HF Mobile, 100W. \$750.

NEW
1-IC 735 HF TRANSCEIVER, brand new, \$1550.
2-IC 725 HF TRANSCEIVER, brand new, \$1243.
TRANSAUX Communications, 53 Broadway Street, Cobram, 3644 PO Box 282, Phone (068) 722 433, Fax (058) 721 104

FOR SALE - ACT

● **SATELLITE** station 2m & 70cm multi 750A with expander-430 USB/LB/CW/FTM, incl 2M-100W & HL 60V linear, plus 13.8 @ 20A power supply, \$975 the lot. (06) 288 7953. AH QTHR VK1BX.

FOR SALE - NSW

● **FT-7B** transceiver in original packing complete with hand-bank, mic, mobile brackets etc. \$450 ono. Peter VK2EVB. (066) 52 7160.

● **TANDY TRS80** model 3 computer — as new Roliflex twin lens reflex camera 3.5 Xenar lens. Will sell or trade for 3 or 4 tri-band yagi or any useful ham gear. David VK2BZM (02) 498 2259.

● **DECEASED ESTATE** of John Gordon Ewing VK2JS HF transceiver Kenwood TS430S, \$1000. S No 3110291, no FM fitted. Scanner, Realistic, FR303, as new, \$150. Unden VHF marine transceiver, CM480, \$240 ono. All equipment tested and working to specs. John Riss VK2KRL (W) (02) 805 7195 (Macquarie Uni), (H) (02) 871 7631.

● **YAESU MUSEN FRG8800HF** communications receiver, 150kHz-30MHz, all mode, EC, owner's manual, \$795. Shure 404C new mic \$85. Hidaka VS22DR 146MHz, mobile ant, \$95 new. Ph (02) 622 6268, fax (02) 356 4136.

● Transceiver TS930S with auto-tuner, additional filters, good order. Manual and mike. Ser No 3050172, \$1900. VK2BIS QTHR (02) 971 5267.

● **YAESU FT-707** txv FC707 altu manuals GC \$650. KW2000A txv manuals N/R \$200. Hansen FS-5 swr metre \$30. Hustler RM antennae FIC \$50. Sunrize headphones KS107V \$30. Microna probe 22-303, new, \$50. SAI cordless drill M2000 F30. S2. AIWA cassette deck AD-M2503 \$40. Realistic Selectadock FM43-217 \$50. Graeme VK2CJ (066) 85 1336 QTHR.

● **YAESU FT290R** all-mode txv 240/12V home brew per-sup for same. Tokyo HL110V 120W 2M linear, KDK FM2025 Mk11-2m, txv, alt manuals, incl Rowland VK2CRP (066) 53 1027.

● **BWD 539A** dual trace CRO 10MHz BW C/W 2 probes TV triggering, in original cart, \$400. Lloyd VK2ELB (02) 639 7007 QTHR.

● **CUBICAL** Quad dismantled c/w guy wires, requires some new bolts. \$50 the lot. George (02) 521 1801 QTHR VK2GT.

FOR SALE - VIC

● **EMOTATOR 1200FXX** heavy duty rotor, \$695. FB condition. Ted VK3TG (052) 593 225.

● **QST Magazine** 1988/99/90 \$5 per issue including postage. WIA Executive Office, PO Box 300, Caulfield South, Vic. 3162.

● **SHACK** cleanout, FT901DM and ant tuner, ext vfo, ext speaker, CW and AM filters, VGC \$1200. Large selection of AR magazines and reference books - free with FT901DM. Old Geloec Q222 160-20cm AM tx \$50. Kenwood DM 81 dip meter, PC, \$120. Leader L50-16 signal generator, VGC \$100. 20-Year collection of junk box' items — make an offer and take it all away! Ring Alan VK3ADK AH (03) 337 7332.

● **ACITRON SSB400** xcvr solid state valve o/p. 160/10m No WARC bands. 100W (SSB) o/p, \$295. Teletype paper rolls \$2 ea. VICKBOB QTHR (03) 578 7441.

● **LINEAR** amp PL2100B \$600. Pair of new 572B 1160L, \$250. TR60X Yag \$300. Heathkit SB610 CRO kit, \$50. Receiving tube manuals: 1945, 1954, 1961, 1970. Valves, new, \$3, GC, \$1. 6AU6, 6BA6, 6BE6, 6BM6, 6AH6, 6BZ6, 6AK5, 6AC6, 6SK7GT, 5Y3GT, EL32, 10BGT, 6SL7GT, 6JL, 6U5, 6BU6. Pair 6146B new, \$55. Mica fixed condensers 2500V wkg. Filter condensers low volts, new. Inductances, silver plated ex-disposals, also inductances and variable capacitors, ex-BC375 tuning units. Nally tower, lightweight type, reasonable offer. Buyer to remove. VK3XB QTHR (03) 528 4686.

● **MOTOROLA Mocom 70** UHF high band mobile transceivers, 8 chan, 35W o/p limited number left, \$60 ea plus freight if reqd. Geelong Amateur Radio Club, Box 520 Geelong, (052) 78 2374.

● **SWAN 350 HF** transceiver with power supply operations & maintenance manual, in good order, \$250. (053) 31 7425 Charlie VK3DCS QTHR.

FOR SALE - QLD

● **HAND TRANSCEIVER** Kenwood TR2400. Digital readout, 10 programmable memories, many other features. \$276. Speaker/mike and base station/Fast-charger, \$60. All GC with manuals. Original cartons, \$310 complete. John VK4SZ QTHR (070) 61 3286.

● **4CX5000A** base, \$500. 3-30PF vacuum variable \$80. 3KV .001 feedthrough \$5. 13E1 tubes fingerstock meters VL280 bases owns rotary switches. Call VK4TL (070) 54 3677.

● **LARGE TX** output tuning capacitors - suit HB linear or ATU YAESU FT-101 txv, clean original cond. Mervyn VK4SO QTHR (07) 846 3875.

FOR SALE - SA

● **KENWOOD TS940S** transceiver with extras, mint cond, \$3500. AMSSB converted CB 10m, \$100. 3EL 10M Yag \$75.



Just after the earthquake by N May VK2YXM

Drake WH7 wattmeter, \$200., VK5DX QTHR (08) 370 9196.

● ENGLISH maritime artists, large full-colour prints of liners Titanic and Mauretania. Of particular interest to ex-Radio Officers. Details Bob VK5QJ QTHR (08) 379 1845.

FOR SALE - TAS

● TR-751A all mode 2 metres, mint cond., \$750. Ph VK7PU QTHR (004) 31 3020.

● YAESU FRG-7700 receiver & antenna tuner, EC, \$500. (002) 39 1210.

● DECEASED estate. Icom 735 HF txvr, ser no 15837, \$1350. Kenpro 800S rotator, ser no MA0250, new, \$400. Kenwood PS-30-PSU, ser no 1020449, \$275. AEA PK 232, incl com fax and com pak cartridges for C&A, ser no 7851, \$450. Icom SM6 mic, \$60. Transmitting gear sold to licensed amateurs only. Ph Peter VK7YP (002) 72 3196 QTHR.

FOR SALE - WA

● TRANSWORLD T1000 solid state linear amp 2-30MHz 70WPEP drive level. 600W continuous 1kWPEP, price \$3k. (09) 444 0285.

WANTED - NSW

● FT101E or similar, in good working condition. VK2BKN QTHR.

WANTED VIC

● AIRCRAFT attimeter WWII type in working order. Ph (054) 33 2377 Mike VK3WW QTHR.

● MANUAL or circuit diag for Realistic DX302 communication receiver. A Leedham, 2/131 the Parade, Ocean Grove, 3226. (052) 55 4047.

MISC - SWAP - VIC

● ACER 500i 640k twin 360k floppies, real time clock. Colour card swap for FT707 or similar, in GC, or sell for \$700. (051) 22 1751 VK3EHH.

WANTED - Q'LAND

● BIRD dummy load or similar, also 7650 YL111 tubes. VK5TL (070) 54 3677.

● BUY or loan, QST September 1980. Gordon VK4KAL QTHR (079) 85 4168.

● KENWOOD SW-200 power meter, couplers or compatibles. Alan VK4FYA (077) 75 2747.

● SERVICE manual and circuit or copy Sanyo VTC 5300PIIN Bealcard VCR, all expenses covered. Tom VK4BTW QTHR (076) 38 3828.

WANTED - STH AUST

● VALVE data book, preferably with cathode ray tube data. Reference/textbook for cathode ray oscilloscope construction. VK5QJ QTHR (08) 264 1902.

Prevent Pirates

Make sure you sell your transmitter to a licensed amateur

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines per issue free to all WIA members, ninth line for name and address Commercial rates apply for non-members. Please enclose a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA

☐ Miscellaneous

☐ For Sale

☐ Wanted

Name:

Call Sign:

Address:

current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State:

Stolen Equipment

Stolen from Bruce Cutler VK3YYD:

Belcon LS-202E

144 MHz (Two metre)

Hand Held

Multi-Mode Transceiver

FM, Upper & Lower Sidebands

Serial Number — 401992

Stolen 7/11/90

Location — Elwood

Reported to St Kilda Police Station

Stolen from Rob George VK3NRG:

Kenwood TS 440S Serial Number 0101192, stolen from vehicle South Perth 14/10/90. Reward offered phone Rob (058) 523 454

Solution to Morseword No 46

	1	2	3	4	5	6	7	8	9	10
1
2
3
4
5
6
7
8
9
10

Across: 1 spit; 2 part; 3 cake; 4 wetted; 5 skite; 6 tenner; 7 saki; 8 takes; 9 sheet; 10 hide.

Down: 1 fare; 2 ales; 3 amend; 4 safe; 5 terms; 6 mope; 7 fist; 8 alb; 9 ups; 10 give

HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information
about the WIA.

Mr, Mrs, Miss, Ms:

.....

Call Sign (if applicable):

Address:

.....

.....

State and Postcode:

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with strictly.

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING : Redfords Media
25 Glenferrie Rd
Malvern 3144
Tel: (03) 500 9464

PRINTING: Industrial Printing
Richmond

MAIL DISTRIBUTION: Polk Mailing Co.
PO Box 140,
Collingwood,
Vic. 3068
Tel: (03) 417 5161

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

ADVERTISERS INDEX

Amateur Radio Action	49
ATN Antennas	34
Dick Smith Electronics ..28, 29, 30	
Electronics Assembly Co.	25
Electronics Australia	IBC
ICOM Australia	OBC,
Kenwood Electronics Aust.	IFC
Magpubs	5
VHF Communications	10
WIA Call Book	15
WIA NSW Division	51

TRADE ADS

RJ & US Imports	54
M Delahunty	54
Transaus	54

VK QSL Bureaux

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 Canberra ACT 2601
VK2	PO Box 73 Teralba NSW 2284
VK3	Inwards - GPO Box 757G Melbourne Vic 3001 Outwards - 38 Taylor St Ashburton Vic 3147
VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger St Adelaide SA 5000
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Anderson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Now it's bigger and better than ever, because our leading competitor *ETI* has been merged with us, to form *Electronics Australia with ETI* — the biggest, brightest and most informative electronics magazine, bar none.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and construction projects.

What about *amateur radio* projects? Well, as you can see there are more of these than before — but we're very interested in publishing more. So if YOU have developed an exciting amateur radio project, contact Jim Rowe by writing to him at EA, 180 Bourke Road, Alexandria 2015. Or phone him on (02) 693 6620, to discuss the possibility of publishing it as a contributed article. As well as earning a fee, you'll also be helping to boost interest in amateur radio!

Take a look at the new, bigger and brighter *Electronics Australia with ETI* — on sale at your newsagent at the beginning of each month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia WITH **eti**

Australia's Top Selling Electronics Magazine

INCLUDED IN OUR JANUARY ISSUE:

SYDNEY NEWMAN: PIONEER AMATEUR-TURNED-ENGINEER

Sydney Newman was the first person to bridge the Tasman with radiotelephony, and supervised the installation of several MW and SW broadcasting stations. Neville Williams recounts his fascinating career.

NEW 2M FM TRANSCEIVER - 1

Here's an outstanding new design for an easy to build 2m FM transceiver for either mobile or base station use. It has full P.L.L. frequency synthesis, dual 25W/5W output, 5/25kHz tuning steps, 24 memory channels, even inbuilt SWR protection.

DR ROBINSON'S 'STENODE RADIOSTAT'

Back in 1929, a British radio engineer claimed to have developed a receiver that could receive AM transmissions while using a crystal filter to remove the sidebands (and RFI). The receiver was a dud, as Peter Lankshear explains, but Dr Robinson's crystal filter certainly wasn't...



Icom HF Transceivers meet the demands of Amateurs

As an Amateur operator, you know what you want in an HF rig. In fact, although Icom are THE professionals when it comes to communications, it is the Amateurs from whom we seek guidance when designing and developing superior equipment. That's why Icom leads the way in Amateur Communications. If space here permitted, we could go into lengthy discourse about Icom's outstanding features and options, but you're probably aware of most of them. Just to prompt your memory, here's a brief summary of our HF Range -



IC-726 Sophisticated, Compact, with built-in 6 metre band

All the features and reliability you've come to expect from Icom in an advanced, Multimode Transceiver - and still at a budget price! Designed with the beginner in mind, the IC-726 is easy to operate but has so many features it satisfies the needs of veterans too. This little beauty receives and transmits on LSB, USB, CW, AM and FM modes just as simply from home, as in a vehicle or the field. Enjoy great mobility potential with our optional HF automatic antenna tuner.



IC-735 a highly advanced compact

An ultra-compact, 100W unit, the IC-735 is well suited for car, boat or aeroplane on 12V operation as well as a base station set-up. You'll cover all HF Amateur bands from 1.8 MHz to 28MHz including 10, 18 and 24 MHz with the IC-735 using features like Notch filter, Past band tuning, SWR bridge, and a Variable noise blanker. Ring Icom for a booklet on this ham band, high performer which doubles as a superb general coverage receiver. Call us now for a colour brochure or the name of your nearest stockist.



IC-765 for the DX enthusiast talking to the world -

Icom have incorporated your most requested features to enable you to expand your HF world with the super-advanced IC-765. Equipped with our exclusive DDS (Direct Digital Synthesizer) System, it boasts a fully automatic, high-speed antenna tuner, built-in power supply and features appealing to CW enthusiasts - a built electronic keyer with iambic operation capability for example (paddle not included). If you'd like to read more about the IC-765's Band Stacking Registers, 99 Fully Tunable Memories and Full QSK Break-in.



IC-725 Compact - Fixed, mobile or portable

Easily operated, the IC-725 is a compact HF transceiver that really delivers extraordinary performance. This 12V powered, full-featured unit has a general coverage receiver as well that won't let you down when it comes to globe-listening operation.

Enjoy great mobility potential with our optional HF automatic antenna tuner - enquire when you call for a brochure or the name of your nearest stockist.

(amateurs are the professionals in the business of communications)

For further information call Icom free on 008 338 915

Melbourne callers (03) 529 7582 Icom Australia Pty. Ltd., 7 Duke Street, Windsor 3181.

Icom Australia's warranty is only applicable to products purchased from their authorised Australian Dealers.

ICOM

■ AMATEUR ■ MARINE ■ LAND-MOBILE ■ AVIATION ■ CB ■ AMATEUR ■ MARINE ■ LAND-MOBILE ■ AVIATION ■ CB ■ AMATEUR ■ MARINE ■ LAND-MOBILE ■

Please rush to me your brochure on the ☐ IC-725 ☐ IC-726 ☐ IC-735 ☐ IC-765 and the name of my nearest Icom stockist.

SEND TO: Freepost 15, Icom Australia Pty Ltd, Windsor, 3181 (no stamp required).

Mr., Mrs., Ms. Company Title

Address Suburb

City Post Code Phone No.

46/47 AR

■ AMATEUR ■ MARINE ■ LAND-MOBILE ■ AVIATION ■ CB ■ AMATEUR ■ MARINE ■ LAND-MOBILE ■ AVIATION ■ CB ■ AMATEUR ■ MARINE ■ LAND-MOBILE ■